Proceedings

American Conference of Academic Deans

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Fourteenth Annual Meeting

DiLido Hotel
Miami Beach, Florida

January 7, 1958

Held in Conjunction with the Meeting

of the

Association of American Colleges

Editor, Paul A. Cundiff
Butler University
Indianapolis 7, Indiana

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and others

AMERICAN CONFERENCE

of

ACADEMIC DEANS

Purpose:

The meetings of this Conference are intended to provide opportunity for academic deans of liberal arts colleges to meet together, to share their experiences, to exchange views, and to discuss problems with which the office of the dean is chiefly concerned.

Eligibility for Membership:

All academic deans who are administratively responsible for liberal arts curricula of institutions which are members of the Association of American Colleges are eligible to become members and are invited to do so. However, the general meetings of the Conference are open to anyone who wishes to attend.

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(Ex-officio, immediate past Chairman)
Oberlin College, Oberlin, Ohio

PROGRAM

8:45- 9:30 Registration..... Lower Lobby
9:30-11:30 Morning Session..... Moulin Rouge

Efficient Use of Teaching Resources

I. From Spoon Feeding to Foraging
Dean W. Boyd Alexander, Antioch College

II. The Promise of Television in College Instruction
Dean Dewey B. Stuit, State University of Iowa

III. Teaching Machines
Professor B. F. Skinner, Harvard University

12:15 Luncheon..... Florentine Room

Address: "On the Use of Teachers"

William C. Fels, President
Bennington College

2:00- 4:00 Group Conferences

Leaders of Conference Groups

Dean Howard S. Greenlee, Park College
Dean Sidney J. French, Rollins College
Dean Nancy D. Lewis, Pembroke College
Dean David E. Henley, Earlham College
Dean William Taeusch, The College of Wooster
Rev. W. E. O'Donnell, College of St. Thomas
Dean Ernest H. Cherrington, Jr., The University of Akron
Dean Lloyd S. Woodburne, University of Washington
Dean Simeon E. Leland, Northwestern University
Dean E. W. McDiarmid, University of Minnesota

4:15- 5:00 Business Meeting..... (Conference Rooms (A and B

Report of the Treasurer
Report of the Secretary
Report of the Committee on Nominations
Other Business
Presentation of New Officers

FROM SPOON FEEDING TO FORAGING

Dean W. Boyd Alexander
Antioch College

Last week when I told my hostess down on the Isle of Pines about my title today, she said, "Oh you should read Elbert Hubbard's A MESSAGE TO GARCIA again." And she promptly produced a copy from her library. As you may remember Hubbard bitterly laments the shiftlessness of the average worker and praises the messenger, Rowan, because he simply accepted the message and went off without a word to carry out his difficult and dangerous task which he duly accomplished. Hubbard illustrates his point by imagining an exchange with a clerk who is asked to look up Correggio in an encyclopedia and make a brief memorandum on his life. The typical clerk doesn't perform like Rowan. He asks, "Who was he? - Which encyclopedia? - Where is it? - Is he dead yet? - Is there any hurry? - Why do you want to know? - Why can't George do it?" Then he still goes off and enlists another clerk's aid in the Herculean task.

If Hubbard were to scrutinize American education today, no doubt he would compare the average student to his clerk. Certainly the teaching process all through our schools doesn't do much to counteract the student's natural tendency to lean on the teacher and to do only what he is told when he is told, if then. The text book system with its daily assignments pervades our schools all the way from the elementary school to the college and indeed it penetrates the lower ranges of the graduate schools. Of course there is an increasing amount of longer range projects as the student advances through high school to college which require the student to exercise some initiative and responsibility. But the majority still plod along through a text book chapter by chapter or even page by page with explications, urgings, proddings and rewards and punishments by the instructor. The American student today expects the teacher to act as a labor foreman and the teacher usually accepts the role.

We weigh the student's accomplishment by the number of hours he sits in front of a teacher and assume that each one carries with it two hours of outside study. The implication is all too clear that the teacher has the responsibility to assign appropriate two-hour tasks for each class exposure. This incubus is so firmly fixed to our backs that we stagger dumbly along under it to the amused and contemptuous scorn of educators in other parts of the world where achievement rather than time serving is the main criterion of student accomplishment and advancement.

Teachers have always been interested in bright, curious and excited students and they still are today. But the number who must be cajoled or coerced each day into ingesting some bit of knowledge sweep over teacher and bright students like a tide. So the teacher goes on administering a small portion of daily pap which some students lap up eagerly but without knowing how to vary or enrich their diet and others swallow with various degrees of indifference. The teacher has little time or energy to inspire and set going the bright students because he must give his main effort to preparing and forcing down the daily spoonful into the

majority. The abler student gets an A with little effort and never forms the habits of intellectual discipline, initiative and responsibility of which he is capable. Whether the teacher's educational philosophy or personal characteristics cause him to coerce or cajole the student doesn't make much difference if the student is unable or unwilling to forage for his own intellectual sustenance.

Society is partly to blame because it accords so little prestige or reward for intellectual achievement either to the teacher or the student. Almost any accomplishment in school from winning a varsity letter to twirling a baton while attractively underclad gets a student more favorable attention from his peers and the public, and all too often his parents, than academic laurels. And the teacher, both in pay and position, is an also ran in the American race.

The colleges and the teachers are partly to blame, though. Despite the low social status of scholarship, the swelling numbers of students, and the credit hour system something more than a rear guard action should be fought. Granted that highly individualized honors courses or tutorials may be beyond the means of most colleges other ways should be sought to throw more responsibility for his own education on the student and to train him to assume it. The course syllabus is a simple but powerful instrument which many instructors neglect which can give the student perspective, purpose and guidance. When a course lacks structure, as so many do, the student, however able, can do no more than follow his nose and the instructor blindly along. When the instructor, even when he has a structure, cannot communicate some of his own enthusiasm for his subject and inspire the student to his best efforts the light flickers and the student falters.

What can be done? One easy but more and more impracticable answer has been to reduce the student-faculty ratio. The population pressure and the inadequate number of qualified teachers who will be available rule this out. And even a one to one ratio doesn't insure that the student won't be spoon fed. The colleges, receiving every year greater numbers of students who have been conditioned to dependence on the teacher, have the problem of how soon and how their spoon feeding methods can be changed for others which will encourage and even require the student to forage more for himself. That the present situation is intolerable seems clear. That it must be improved with fewer teachers may seem to involve a logical contradiction but perhaps the very gravity of the situation may force us to find solutions not previously tried.

In the last two years several dozens of colleges and universities have been experimenting under foundation grants with the overall purpose of using faculty more effectively. Some of these colleges, including my own, have been carrying out experiments in independent study in regular courses with the double object of increasing the student's intellectual independence and reducing faculty load. Some of our experiences with two such experiments may be enlightening.

In the academic year 1956-57 five Antioch courses were conducted largely as reading courses with much reduced student-teacher contact and with control groups to give a check on the results. Four of the courses were small ones for upperclassmen, and one, the largest, had a majority of freshmen. The five courses were Donne to Pope, Aesthetics, Twentieth Century America (a history course), Social Conflict

and Disorganization, and Problems in Sociology. The last was the large freshman course.

The purpose of the study was to investigate this question: "Could the student take more responsibility for his learning and the teacher take somewhat less without impairing and perhaps increasing the learning?" (The foregoing quotation and those which follow are from a preliminary report by Ruth Churchill, Antioch College Examiner).

The specific hypotheses investigated were:

(1) "that students who met their instructor the usual number of class meetings (generally three times each week for an hour at a time) would not differ in their learning from students who met their instructor on the average about once every two weeks, and

(2) "that instructors would spend less time on courses where they met students for substantially fewer class hours".

The analyses of the instructors' time sheets has not been completed. So many variables are involved that it will be difficult to state with much confidence whether there was a saving of instructors' time. However, "the evidence from the time sheets indicates that the students in the experimental groups did not substitute individual conferences for class meetings to any greater extent than did the students in the control groups".

"It was assumed that the teacher is responsible for the organization of a course--selecting objectives and content--and for evaluating and interpreting the material relevant to the central problems of the course, and that these responsibilities should be maintained while lessening the amount of face-to-face interaction with students. The faculty time saved would thus be that involved in class meetings (lectures and discussions) and in preparing for these meetings. The increased student responsibility would lie in the fact that students would be expected to cover content and to achieve the objectives of the course through readings, work, and discussions conducted without the presence of the instructor and much more in response to their own planning. This increased responsibility for the student could conceivably be valuable not merely as a present condition of instruction but as training for adult situations when individuals have to assume full responsibility for their own learning".

The foundation grant provided for the five instructors and the College Examiner to spend a month on campus in the summer of 1956 to design the experiment and for each instructor to prepare special materials for his experimental course---supplements to the regular syllabus, pre and post evaluations, etc. All concerned, in looking back on the experiment, agree that this month of working intimately with faculty colleagues on a common problem of instruction was a unique and many valued experience which alone justified the time and creative effort they expended.

The group was determined to obtain objective comparative data on the performance of the experimental classes versus the controls. They leaned over backward in the

design to avoid the Hawthorne effect whereby the experimental group develops an elite feeling and becomes more highly motivated for that reason. It was decided "to explain as little as possible about the experiment to the students". This policy was brilliantly successful but with reverse English so that it is now called by the humorously inclined the Churchill effect which seems very funny to everyone but Mrs. Churchill.

"There was no 'Hawthorne effect' in the sense that students in the experimental courses felt they had been exceptionally fortunate. Rather these students felt that they had been deprived of the instructor whose organizing and interpretive functions they equated with direct face-to-face contact with him on a frequent basis. There was much resentment of this deprivation. This feeling did not affect their evaluations of their instructors, however. Their teaching was rated at about the same level by students in both the control and the experimental groups. It would seem that the hostility was directed against the experiment and not against the instructor, who was viewed by many students as a fellow victim of an outside agency (the Educational Policy Committee and the Testing Office of the College)".

"The over-all design of the experiment took advantage of Antioch's academic plan of having two groups of students alternately on campus. The A group of students, on campus in Periods I and III, constituted the control group, taught by the lecture-discussion methods already used by these instructors; the B group of students, on campus in Periods II and IV, constituted the experimental group, who had less than normal contact with their instructors. There was no reason to believe that the A and B groups would not give adequate samples of the student population. In addition, since the two groups were on campus at different times, the separation of the groups would lessen the interaction between the two groups.

"Periods I and II are each eight weeks long; Periods III and IV are twelve weeks long. This arrangement of the academic calendar was taken advantage of in the experimental design by treating Group A in Period I and Group B in Period II as exactly alike as was possible so that the two groups could be matched not merely on background factors which would appear relevant but also on their direct learning performance in the courses being studied. Thus both groups A and B spent their first four weeks on the same material covered in the normal lecture-discussion pattern and their second four weeks, again on identical material, covered in the experimental manner, with no more than one class meeting with the instructor each week. Thus for each student, in both the control (A) and the experimental (B) groups his gain under notmal lecture-discussion methods and his gain under independent study would be known. The control and the experimental groups were then matched on these two types of gain. (In addition, such background variables as sex, scholastic aptitude, major field, year in college, flexibility of attitude, initial level of achievement in the course were ascertained.)

"The four-week independent reading period within the matching period also served to introduce the students to independent study. While all had had experience with lecture-discussion classes, few had probably had much experience with courses where students met so infrequently with the instructor or where classes were supposed to discuss problems without the leadership of the instructor. This four-week period then gave everyone a brief practice period before the experiment proper".

In Period III the A group (control) returned to the lecture-discussion method with three class meetings per week while the B group (experimental) continued with only one meeting every two weeks.

The evaluation program involved multiple-choice questions "emphasizing understanding and grasp of principles and problems rather than discrete factual knowledge, short-answer tests emphasizing ability to deal with issues and problems", and essays. The instructors certainly believed that they were testing for more than Factual Knowledge. The whole battery for each course was given at the beginning and the end and the tests covering each fourth of the course were given at the beginning and end of each fourth. The essays were graded by specially trained readers. Statistical evidence of adequate reliability and validity was produced. Though the amount of repetition of the evaluation measures might be questioned the Examiner and the instructors felt that there was internal evidence that the demonstrated gains were the result of new learning rather than of memory of the questions previously asked.

"All the evidence available on direct gain under control conditions (weeks 1-4) and direct gain under experimental conditions (weeks 5-8) as well as the evidence on relevant background variables indicates that the groups were surprisingly well matched. Both experimental and control groups made significant gains and the gains were quite similar for the two groups."

"With some reasonable confidence.... in the existence of differences in amount of contact with the instructor between the control and the experimental groups, in the adequacy of the measuring instruments, and in the matching of the control and the experimental groups, the original null hypothesis that students who met their instructors as usual in lecture-discussion courses would not differ in learning from students who met their instructors only one-sixth to one-third as frequently can be evaluated against the results. Pages of data relating to differences in anticipatory gains, direct gains, accumulated gains, and overall gains can be summarized very briefly by saying simply that there is no evidence that would lead us to reject the null hypothesis. Differences between control and experimental groups reflecting different treatments for twelve weeks are by and large insignificant. And it is true whether multiple-choice tests or essay tests are used."

"While the null hypothesis is not to be rejected, it must be remembered that it cannot be proved and therefore we may not conclude that there is no difference in learning between the two methods but only that no difference has been established."

Though one of the courses was introductory, the results were strikingly similar to those in the upperclass courses which might indicate that "the usual lecture-discussion class meeting three times a week is not necessarily better than independent reading for introducing students to the material in a field."

This modest experiment did not produce startling or positive results though the lack of significant differences between the control and experimental groups kept surprising the instructors because of the hostility and anxiety in the ex-

perimental groups. And the students in the experimental groups were quite incredulous when they heard about it. Even those who did well felt they might have done better with more instructor contact.

We learned a number of things from the experiment. First, we agreed that we made a serious error in keeping the students in the dark about the experiment. Antioch students are used to being "in on things" and to helping to plan as well as execute almost all college projects. So they resented being treated as guinea pigs in such a blindfolded fashion.

Second, it early became clear that students needed encouragement, guidance and training to study more independently. That they came to college conditioned to the teacher-directed classroom and against independent study so that they are virtual intellectual cripples was brought forcibly home to us. This influenced us strongly in the design of the Independent Study Experiment for the year 1957-58 which is now going on. It emphasizes training for independent study both in small groups and alone and is attempting to evaluate increases in learning resourcefulness as well as knowledge gained.

Third, we were so struck by the values of instructors working together on a joint project of instruction that we intend to experiment further with this technique. Last summer a group of faculty members who were designing new general education courses for our radically revised general education program spent four weeks on campus at the task and met together a number of times to discuss their common problems. For next summer we have plans for several teams to spend shorter periods on campus, one to two weeks, working together on limited problems.

Fourth, we learned that one way to arouse interest in independent study is to have people doing something about it and especially under experimental conditions with some attempt to measure results.

Fifth, we learned something about how to help teachers set up plans for independent study projects and we learned just as much what not to do as what to do.

Sixth, we accepted the humbling idea that we must learn a great deal more about the learning process if we are to be effective and intelligent guides to students trying to study more independently. This experiment, as well as the one now going on, the inclusion in our new calendar of a three months off campus period of independent study for seniors, and the large number of students now going abroad to study for a year under our new Antioch Education Abroad program, has sensitized the faculty to the problem.

Seventh, the fact that no differences in learning were found between the two methods of instruction and study has led some faculty members to try variations in the frequency of class meetings and various methods of encouraging and training students to take more responsibility for their own learning. If this year's experiment produces further evidence of the same kind a policy which will permit fewer class meetings and more emphasis on independent work may well be adopted. This might reduce faculty loads so that the student-faculty

ratio could be increased, more faculty time could be made available for research and scholarly study, more faculty time could be devoted to advising students and to committee work, or any combination of these might be effected.

There is still much skepticism, though, and not a little cynicism on the part of some members of the faculty and certainly the students in last year's study were very unfavorably impressed. So let me quote from a memorandum from a faculty member who had just listened to a presentation to the faculty of last year's experiment. He certainly represents the feelings and even the fears of not a few teachers in his brief and eloquent memorandum to the Chairman of the Educational Policy Committee.

"All during the various contributions this afternoon as to the relative merits of the controlled and the experimental classes last year, several points continued to bother me.

"We are raising the question of whether the small liberal arts institution really performs the function we have been claiming the past quarter-century, namely, that it is not merely the transfer of factual knowledge which takes place, but that there is a certain intangible contribution to the individual student's growth which comes from close proximity to gifted elders. Some instructors impart their qualities best in discussion groups; others in the lecture hall; but the method is secondary to the fact that there is collision.

"Furthermore, these contributions are sufficiently intangible to defy the snares of existing testing mechanisms; and, as I gather from today's presentation, the measurements we have received so far do not pretend anything more than to be a statement of factual information which the students have accrued.

"But if the statistics to date are taken at their face value, what are we to say to the student who meets his instructors once every several weeks should he inquire why he ought not go to a large university for his undergraduate work, where facilities for independent study--great libraries, public lectures, concerts, and larger faculties--offer him more?

"I view the question with alarm, because the whole process (and I suspect that the Foundation is fishing for answers it already has--or at least wants to find) strikes me as merely one more aspect of the dehumanization characteristic of modern life. I also recognize that my reaction may stem from my determined notion that teaching is 90% art, 5% science, and 5% luck. Accordingly, I am suspicious when the artist is removed to a part-time basis, anticipating that the intellectual results will be feebler--if not immediately measurable. "The things which are seen,' after all, 'are temporal'."

This year Antioch is experimenting with independent study in eight courses in which we are comparing the educational effectiveness of lecture-discussion sections with small groups of five to seven students studying independently and with "lone wolves" studying on their own. Independent study comprises two-thirds of the course time. The courses include both general education and field subjects and at both introductory and intermediate levels.

Contrary to last year's method the design calls for the orientation and training of students for independent study. Techniques and suggestions are built into the syllabi and are rehearsed and explained by the instructors. Careful inquiries near the end of the first quarter show success in the reduction and near elimination of negative student reactions. This time, at least, they are grinning rather than growling. One student was heard to say to another, "They divided us into sections for the experiment today. There is the lecture section, the discussion section, and the do-nothing-at-all group." No comparative data on achievement is yet available.

A new aspect of this project is "the development of a series of situational problem tests calling for individual initiative and thinking in problem solving and designed to provide a measure of resourcefulness and adaptability in handling new learning situations." (Quoted from the original proposal)

The eight instructors spent a month on campus last summer with the College Examiner in designing the experiment and developing their own methods and special aids for independent study. Only one instructor had participated in the previous experiment and in a different course.

A special foundation grant enables Antioch, Carleton and Oberlin, which have somewhat similar projects, to have delegations from each college meet together several times for mutual aid in planning, carrying on and evaluating their results. The University of Michigan, which has a similar experiment under way, is also sending a representative to the meetings.

While we have used tutorial courses for many years to enable students to go beyond the bounds of the courses offered and the two controlled experiments are giving us much more experience we do not venture to generalize for the benefit of other colleges. Our experience so far in attempting to measure the effects of independent study is simply presented for whatever suggestive values it may have. The one thing we feel sure about as of now is that the experiments have lifted and jolted us hard enough that we shall make more efforts than ever before to help our students to forage for their own intellectual fodder.

* * * * * * * * * * * * *

THE PROMISE OF TELEVISION IN COLLEGE INSTRUCTION

Dewey B. Stuit
State University of Iowa

A little over ten years ago educators and many interested members of the lay public began to talk seriously about the possibilities of television as a medium of education. With the cooperation of the Federal Communications Commission, channels were reserved for educational use and shortly after the opening of the present decade educational television stations appeared upon the scene. During the last five years we have witnessed a phenomenal growth in educational television at all levels - elementary, secondary and higher education. It is a fitting question, therefore, to ask what are the merits of this particular medium of education, what are some of its limitations and in particular what is its future as an aid to instruction at the collegiate level?

It is only natural when a new invention appears that a certain number of people go "overboard" in their enthusiasm for the new device while others maintain an air of skepticism or even of hostility. Educational television is no exception to this generalization. In the early days of this decade it was not uncommon to hear TV enthusiasts speak as though all the problems of education would be solved if only every college and public school system could have a television station. One also shortly began to hear of fears being expressed that very soon education would become completely impersonalized and all teaching done on a mass scale. I suppose some entertained the fear that we would soon be producing college graduates much as Detroit produces automobiles on its assembly lines. One faculty member speaking at a national meeting made the comment that "substituting for a cliché of the past a cliché of the future American education will soon connote a professor at one end of a coaxial cable and 5000 students at the other." This, he felt, was "an electrifying if not a shocking idea." Now I do not wish to suggest that there has developed open warfare between those who believe in educational television and those who do not, but I do suggest that there are definite differences of opinion concerning the virtues and shortcomings of the medium. Some fairly good research on educational television has already been done and I need not add that much research remains to be done.

There are two or three significant and obvious advantages of television as a means of mass communication. First, television is an aid to the eye in the same way that radio is an aid to hearing. An event anywhere in the United States or Canada (and soon, perhaps, an event anywhere in the world) can be televised and brought into the living room, classroom or laboratory. In other words, television is an extremely versatile instrument for the teaching of current events, e.g., the inauguration of a President, committee hearings in Congress, meetings of the United Nations. General Sarnoff of RCA recently said:

> "Educational television offers one of the best means for bringing the living presence of great inventors, teachers and explorers to a vast audience. For example, it enables a man like Major Simons (the Air Force medical officer who went up 100,000 feet in a baloon) to talk to students about his experience more than 19 miles above the earth, and to acquaint them with the fascinating

aspects of aerodynamics, meterology, astronomy, cosmic radiation and high-altitude physiology."

To the extent that current events are worthy of teaching time, television is a marvelous educational tool, for it literally erases the effects of distance and gives the viewer a front row seat at the event which he wishes to see. Television, it has been said, is truly the magic carpet of the 20th century.

A second attribute of television is that it greatly increases the size of the audience which can witness a particular activity, be it a lecture, a demonstration or a current event. In such cities as Chicago, East Lansing, Houston, New York, Pittsburgh and St. Louis very large audiences can see and hear what goes on in a college classroom or laboratory. While not all viewers of such courses can be regarded as serious students, it would be a safe assumption that the educational institutions giving the courses in the cities just mentioned could not easily accommodate all the viewers in their classrooms. In brief, the size of an audience which can view and hear a lecture or discussion is limited only by the number of sets available and the number of persons interested in the courses being offered. To the extent that such viewing and listening have educational value, television constitutes an educational potential of great dimensions.

A third attribute of television is that it can bring into view objects and events which could not readily be seen without the help of the TV camera. Many of us have had the experience of getting a better view of a football game through the lens of the TV camera than one can get for himself sitting on the fifty yard line. In fields such as medicine and dentistry, particularly, actual ongoing events can be televised very effectively. While films can be used in much the same way as television for teaching purposes, the advantage of television is that it captures the event at the time it is occurring. Considering the importance of motivation in learning it is readily apparent that this attribute of television may have many interesting and challenging applications in education.

A fourth attribute, related to the first one mentioned, is that even while reaching thousands of viewers the teacher or performer whose image appears on the screen conveys a considerable degree of person-to-person "contact". Indeed, some students have stated that they feel a closer bond with the teacher whose image appears on the TV screen than they do with a lecturer in a large auditorium. It seems quite well established that if skillfully used, television can give the viewer the impression that a speaker or discussant is actually talking to him as an individual person. I believe it must be admitted that this attribute of television gives it decided advantages in a situation where methods of mass education are deemed appropriate or necessary.

Granted that television is a powerful tool for overcoming the barriers of space and time, can the television screen and accompanying audio system ever (or sometimes) serve the same function as the teacher who is physically present in the classroom? At present, many college faculty members would respond in the negative. What is the nature of the questions which faculty members, students and other interested persons have concerning the effectiveness of television as an educational medium? Perhaps the objection heard most frequently is that of lack of "feedback". Many

would contend that teaching must inevitably be a two-way process, even in lecturing, and certainly in the normal classroom situation. Not only may the quality of teaching be affected by this lack of "feedback" but some have expressed the fear that young men and women seriously considering teaching as a profession might be discouraged by the extensive use of television and the resulting absence of personal contact with students. While the lack of "feedback" has not been shown to affect seriously the actual performance of students as measured by achievement tests, it is, I believe, an established fact that most teachers and students miss in the television teaching situation the face-to-face contacts which are commonplace in the regular classroom.

A second criticism of educational television is that it takes an extraordinary amount of the instructor's time. It cannot be overemphasized that if really done well, a 30-minute classroom performance per day is about all that can be expected from the typical faculty member, at least during the first year of his experience with television. If the television lecture, discussion or demonstration is to hold the attention of students it must be done extremely well. This calls for very careful preparation of the material to be presented, the use of props and rehearsal of the performance with and without cameras. I suppose it could also be said that this type of performance takes a vast amount of nervous energy. Since most colleges and universities are committed to the philosophy of having a faculty composed of scholar-teachers it can be seen that one will probably not find a large number of faculty members who are willing to put in the amount of time required for a good television teaching performance. This does not mean that these faculty members are necessarily satisfied with a second-rate performance. What it does mean is that the extra time required for television teaching is desired by many faculty members for application to their research and individual work with students, rather than in preparation for TV teaching.

A third reservation about television is that it is a costly medium of instruction unless one can reach very large numbers of students. The initual outlay for equipment is considerable, maintenance is costly and a team of persons is required to put on a good TV performance. In addition, if a number of schools plan to cooperate in a TV teaching program as has recently been proposed in some states and regions, there is the expense of transmitting the signal from the studio to all the members of the TV teaching enterprise. In view of this expense, some would ask whether it might not be better to spend the necessary money in hiring extra teachers (assuming they are available) instead of buying TV equipment and hiring the necessary service personnel. This is a question which cannot be dismissed lightly.

If it is accepted that television has great potential, but also limitations, we should next ask how it is being used and with what success. It would seem that the uses of television fall roughly into three categories.

First, television is being used to present lecture, discussion and demonstration-type instruction to audiences located in distant places - in homes, classrooms, laboratories, hospitals and even prisons. In other words, the medium of open circuit television is being used to bring the student and the teacher into a meaningful educational relationship, despite separation in space. In some instances this has been done by telecasting ongoing classes, in other instances by arranging special

studio performances for telecast purposes and in still others as a supplement to or replacement of correspondence study. It will be recognized, of course, that in all these instances the concern is with a program of mass education. Without going into detail I believe it can be stated that in most cases where student performance has been measured by means of conventional tests, no statistically significant differences have been detected between the performances of students who have been reached by television versus those physically present in the classroom or studio. Where student reactions have been sought these have been found to be in the neutral range, varying from quite favorable to rather unfavorable.

A second use of educational television is that of the closed circuit situation on the individual college campus. In this system verbal materials and lecture-demonstrations are transmitted to classrooms or viewing rooms in the same building or adjacent buildings. Most persons present here today are probably familiar, for example, with the extensive experimental work done at Pennsylvania State University with this particular use of television. The primary purpose of this use of closed-circuit television is to reach a larger number of students than can be accommodated in one room, to make available an especially skillful teacher to a larger audience without requiring that the teacher repeat his performance a number of times, or to show more clearly and dramatically certain objects or events. Here, as in the case of open circuit television, the measured achievement of students taught via closed-circuit television has not differed significantly from the performance of those taught by conventional methods, and again, student attitudes appear to fall primarily in the neutral range.

A third use of educational television is that of an adjunct to teaching in the same manner that films, slides, charts, books and maps have been used for a long time. In other words, television is being used as another audio-visual aid with the individual teacher continuing as the central, guiding figure in the classroom and directing the total program of educational activities. This use of television as an audio-visual aid is feasible with both open and closed circuit systems. At Purdue University, for example, laboratory instructions for several sections of general Chemistry meeting at the same hour have been transmitted via television receivers. The results at Purdue, and other institutions using television in a similar manner, have been reasonably satisfactory.

A fourth and more limited use of television is that of a research instrument for studying the teaching process. When a lecture, a classroom discussion or a demonstration is put on television it can be viewed by outsiders, including raters who are interested in the quality of the educational experience which the students are receiving. It has been said that the college classroom is the professor's private castle. Most of us in this room would admit that the visitation of classrooms by outsiders, including deans and department heads, is not a common practice on the college campus. As soon as a class is televised, this situation is changed drastically. It now becomes possible to rate the performance (unobserved), to check on the number of participations per student, the total time spent in discussion, the percentage of time devoted to listening and discussion and the apparent interest shown by the students. While some rather extravagant statements have been made about the possible uses and misuses of television as a means for "looking in" on classroom activity, there is no question but what television can be used as an instrument for studying the teaching process. The application of this use of tele-

vision in teacher training programs is quite obvious.

If we grant that television is here to stay and that it has potential as an educational medium, what does its future appear to be? Will it help us meet the problem of rising enrollments and does it offer possibilities for improving the quality of college teaching? A number of attractive possibilities present themselves for consideration.

Frequent mention has been made of the fact that it will be very difficult to find enough qualified teachers to staff the faculties of colleges and universities in the years ahead. Under these circumstances would it not be wise to consider the linking together of the colleges in a state or region and to have one "master" teacher offer a course in Western Civilization, General Chemistry, or Survey of American Literature? The argument in favor of such a scheme is that only a limited number of first-rate teachers, plus the medium of television, would make it possible to have a larger number of students taught by an excellent teacher, assisted by a staff to produce his lecture or demonstration and by others who would answer questions raised by students. The concept here is that of an instructional team, somewhat comparable to the medical team consisting of the doctor, intern, nurses and other aids. Granted that this type of teaching is feasible and within the limits of financial resources, is this type of education successful and desirable?

One answer would seem to be that a highly skilled teacher can stage a television performance which is interesting and, for the purpose of teaching facts and concepts, educationally quite successful. There seems little doubt that under such a system some students would be taught better than they are now. And yet, to me it seems that television used in the manner described is limited to being a tool of mass education. Now I believe that mass education is highly desirable and that it has made a great contribution to our American way of life, but it would be unfortunate if we were to give the impression that the whole of education can be given on a mass basis. Personally, I wonder how many chemists, mathematicians, or philosophers we would produce if we employed only mass methods of teaching. To my knowledge no one, not even the most enthusiastic advocate of television, has recommended that we teach honors sections by means of television. It is generally agreed (although to my knowledge it has not been demonstrated by research) that this type of teaching requires a direct meeting of minds, a face-to-face type of learning situation. The presentation of a subject via television can hardly be accomplished on an individual basis. By its very nature television is a means of mass communication. There is a place for mass education in parts of our college programs of instruction but we would be deceiving ourselves and the public if we gave the impression that a complete college education including extracurricular as well as curricular experience and the intellectual atmosphere of a college campus can be transmitted adequately via television.

The next question which one might ask with respect to the future is whether closed circuit television holds promise for helping to solve the teaching problems on the local campus. The answer would seem to be that it depends upon the subject matter to be taught, the methods of teaching to be used, and the physical facilities of the institution. If the State University of Iowa were to build a large, new classroom building next year we would most certainly recommend the installation of the necessary coaxial cable and the construction of a classroom of the television studio type.

At the same time, I do not see much point in planning to give lectures via television if one can arrange to build lecture rooms large enough to seat all the students who would be taking a particular course. Naturally if no such lecture room is available, but smaller rooms are available, they could be linked together by means of a television system. In brief, this observer does not believe that there is much likelihood that closed circuit television will be the complete solution to our problems occasioned by rising enrollments. For certain courses on certain campuses this medium will prove to be helpful; it will not be the complete answer to our problems.

If television is unlikely to solve our enrollment problems (except where mass methods of education are feasible and desirable) can it help us in the improvement of teaching? The answer would seem to be that if used intelligently and imaginatively, television does have this potential.

Mention has already been made of the fact that master teachers can be made available to more students than ever before through the medium of television. To the extent that a teacher of national recognition in his field can be called upon to lecture on, or discuss, a particular topic, simultaneously for a large number of classes, it appears that the teaching in some local situations could be improved utilizing this method (parenthetically it may be asked, however, whether films aren't a better answer). Because of schedule difficulties and diversity in offerings it does not appear too likely that this technique will have any great effect on college teaching. The promise would appear to be greater at the elementary and secondary levels as has to some extent been demonstrated in the Hagerstown, Maryland, experiments.

Another question which one may ask is whether television will help the teacher in the presentation of facts, processes or concepts. In large classes students sometimes complain that they are unable to see the demonstration or that they cannot follow it closely enough. Would the use of television correct such difficulties? The answer would seem to be a qualified "yes".

Possibly the most dramatic application of the use of closed circuit television has been in the field of medicine. Large numbers of students have been able to observe an operation in an adjoining room without causing any disturbance in the operating room itself. It goes without saying that color television is far superior to the ordinary black and white for this purpose. Dramatic illustrations of the usefulness of television in dentistry and in certain science courses have also been described in the educational literature. Where objects must be shown, processes or skills demonstrated, television would seem to have real potential.

Still another role which television may play in the improvement of teaching is that it may make possible the use of a method, or methods, which would not be feasible in the absence of a medium of mass communication. In many of our large institutions, for example, elementary courses are often taught in part by the lecture method. A number of educators have argued that the lecture method should be abandoned and the discussion method substituted. This is precisely the problem in which we have been most interested at the State University of Iowa. We have asked ourselves this question: Is it possible through the medium of television to give

vicariously to all students in a course with a large enrollment the experience of learning by the discussion method? We have studied this question by having a small studio audience of fourteen students, plus the instructor, televised to students meeting in adjacent rooms. The students in these viewing classrooms have been able to observe the discussion and occasionally to break in themselves by means of a two-way audio system. We believe that we have demonstrated that the discussion method of teaching can be used in this manner but thus far we have not been able to demonstrate that the results achieved are any better than those obtained by the straight lecture method. Nevertheless, I think that if one can demonstrate that the discussion method of teaching is essential in a particular course, television would enable us to make a "master discussion leader" available to a much larger number of students.

The teaching of mathematics by Washington University, St. Louis, using both open and closed circuit television, constitutes another illustration of an attempt to use television as a means of improving the quality of instruction. Lectures are given by senior staff members in the afternoon and evening on open-circuit television and are repeated several times the following day on closed-circuit television. In addition, assistants in instruction are available throughout the day for individual consultation with students. This total program of instruction makes available to every student the knowledge and skill of a highly experienced member of the staff, it permits review of the lecture material as many as 3 or 4 times and it provides opportunities for individual consultation. It would seem that such a program would possess the potential of giving the student a quality of teaching in mathematics superior to that found in many institutions of higher education where such facilities for instruction are not available.

Any teacher who has ever taught on television will testify that this experience has prompted him to re-examine his teaching procedures and to give more time and thought to the preparation of his lectures or discussion classes. We have always known this, but television has reminded us that good teaching requires careful preparation and that it is not only legitimate but essential to have one or more staff members spend a good deal of time in preparing teaching materials. While I believe that American Government has always been well taught at the State University of Iowa, I am sure that the staff would agree with me that the syllabus of the course and the discussion questions received more time and attention during our closed circuit television study than at any other time in the history of the course. When a performance is to be televised it must be carefully planned and skillfully presented. Even though only a few courses are televised and only a few instructors are involved, I believe that this experience has a good effect on the quality of teaching on the campus.

Since television is a relatively new medium of communication, its availability has prompted the planning and carrying out of a large number of educational experiments. We in higher education have not been particularly diligent in studying our procedures, particularly our teaching methods. We have also been slow in applying modern measurement techniques to the problem of assessing the outcomes of instruction. I feel that we know all too little about the quality of our teaching and I would add that I think we should spend more time and effort on the problem of measuring outcomes of instruction. I believe that any institution which uses tele-

vision will want to experiment with it in order to determine how it can best be used most effectively. This requires the setting up of educational experiments and constructing testing instruments which will measure the outcomes of instruction. Quite apart from the fact that the television camera itself can be used as a tool to study the teaching process, I believe that it has served as a means of stimulating interest in educational experimentation and has focused attention on the inadequacies of many of our present instruments of measurement. This I count pure gain.

At this point in the history of educational television we can probably safely conclude that television will find many uses in higher education. On some campuses and in some regions it will be feasible and desirable to televise courses by the open circuit system. Students enrolled in televised courses may "receive" the course in their own rooms or they may be located on other campuses. There will also be instances where closed circuit television can be used effectively to bring a lecture to a larger number of students or to teach a course with a large enrollment by the discussion method - using a highly skilled teacher and a studio audience of limited size as the teaching instrument. Both the open circuit and closed circuit systems will find important applications wherever mass methods of teaching are feasible and desirable.

It would seem to this observer, however, that the main uses of television will be as an adjunct to teaching; in brief, as one more although very powerful audio-visual aid. In fields such as medicine and dentistry this application of television will be especially popular. It is also likely that this type of application will find some use in the teaching of basic science courses. At the present time, and in the foreseeable future, it would seem that the individual teacher, in person, will continue to be the central figure in the classroom. Sometimes he will find television useful in his teaching, sometimes films, sometimes slides, sometimes just an ordinary blackboard and always, we would hope, books and periodicals. Television is no panacea for all our problems in education but it is a superb audio-visual aid and we should use it just as skillfully as we possibly can. It would indeed be a sad commentary on all of us in higher education if we were to ignore this medium - perhaps the most powerful of all the instruments of mass communication ever devised by man. The skillful and effective use of this new tool should challenge our imagination and stimulate us to apply it in such a way that we will improve our teaching and serve better the educational needs of our youth. This means research, and more research, in all phases of our educational program. In conducting such research we can perhaps find the answers to some of our questions and the solutions to some of our problems as we face a decade of unprecedented challenge in higher education.

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TEACHING MACHINES

Professor B. F. Skinner
Harvard University

(Summary of a paper presented at the Fourteenth Annual Meeting of the American Conference of Academic Deans, Miami Beach, Florida, January 7, 1958.)

The world-wide demand for more education which has followed from a rapid increase in population and from sweeping cultural changes cannot be met simply by building more schools and training more teachers or by improvements in curricula, texts, or classroom practices. Education must become more efficient. Among other things the teacher needs capital equipment. Audio-visual aids, a step in this direction, leave certain issues unresolved. Like lectures and textbooks they present material and attempt to make it interesting, but they do not guarantee the student's participation or solve the problem of his motivation. The idea of a teaching machine is not new. In the 1920's, Sidney L. Pressey designed several machines "which not only test but teach." He pointed to two advantages. First, the student is told immediately whether he was right or wrong -- a considerable improvement over the usual practice in which the student hands in a paper or examination which is corrected and returned to him, possibly many days later. Secondly, each student can work at his own rate. Even in teaching a small class the instructor is usually aware that some students could be going more rapidly while others are being pressed beyond their interests or capacities.

Pressey's machines were essentially multiple-choice memory drums. Although they could, as he emphasized, teach, they were primarily suited for self-testing. Recent work in the experimental analysis of behavior, together with a closely integrated study of verbal behavior, has led to the design of a different kind of machine. These have the advantages Pressey pointed out, but the emphasis is upon teaching rather than self-testing. A pre-verbal machine for nursery school and kindergarten teaches the pupil to match colors, shapes, and sizes. It can be used to teach reading. In a machine to teach arithmetic and spelling, in the lower grades, the pupil composes his answer by moving sliders. Its correctness is tested and reported by the machine. The student must compose the right answer before moving on to the next step. A machine for use in high school and college will be demonstrated and discussed here. It operates in the following way. The material of a course is broken down and arranged in a long series of steps. A group of steps is printed in radial sectors on a twelve-inch disc. Each side of a disc carries thirty sectors or frames. An introductory course might require 8,000 to 10,000 frames, or about 150 two-sided discs. A record of the student's progress is kept on a card. The student makes an appointment in a Self-Instruction Room. When he presents himself, he is given the disc in the series for which he is ready. He inserts it in a machine. As soon as he closes and starts to operate the machine, the cover is automatically locked. Each frame presents its material through a window, part of which is covered by a movable lid. The exposed material instructs him to do something -- such as comment on a chart or other material supplied with the disc, complete a sentence, or translate a sentence. The student writes his response on an exposed strip of paper and then lifts a lever. This moves his written response under a transparent cover and removes the opaque lid from

the remaining part of the radial sector, which reveals the correct response. If he answered correctly, he moves the lever to one side. This punches a hole opposite his answer, leaving a record that he has called it right, and reduces by one the number of times that frame will appear during the session. If the machine is set for one correct answer, for example, all frames answered correctly the first time do not appear when he works around the disc a second time. Frames answered correctly the second time around do not appear the third. When all frames have been correctly answered, the machine can be opened. The student tears out his answer strip and returns it, with the disc and any accompanying material, to the attendant.

Material has been prepared for parts of physics, trigonometry, the use of co-ordinate systems, beginning languages, poetry, literary appreciation, and so on, for informal and fragmentary research. The machine will be used in the writer's course in Human Behavior in the spring term of 1958 in a more formal experiment.

The machine is relatively unimportant compared with the material to be used in it. The machine simply mediates the contact between programmer and student. In programming a given subject-matter several issues are raised. The subject must be analyzed to determine the form of the behavior desired at the end of the course. This material must then be broken down into a large number of steps, beginning with complete ignorance and leading to complete competence. The steps are then put into suitable form for presentation on the machine. Each segment must evoke appropriate behavior on the part of the student, and devices have been worked out for prompting or otherwise encouraging the behavior at the appropriate time. As the program progresses, this behavior must be brought under specified kinds of stimulus control. Informal tests to date indicate that students will continue to operate the machines for long periods of time with a minimum of fatigue or feeling of effort and that they maintain an interest in the work. The conditions for learning are generally highly effective.

The closest parallel to such a machine appears to be the individual tutorial relationship. The good tutor knows exactly what step the student is ready for next; the machine knows this by virtue of the design of the program. The tutor helps the student to emit the correct response by supplying a variety of hints and suggestions; the machine does this in essentially the same fashion. The tutor (like the machine) immediately tells the student he is right at every step in the learning process (although this is physically impossible for the teacher of even a small class). Lastly, of course, the good tutor is familiar with his subject, and this is presumably to be said also for the specialist who prepares the machine program.

A teaching machine, in a word, is simply an effort to provide optimal conditions for self-study and learning. Such a machine can take over the more formal part of instruction and release the teacher for discussions and other activities which cannot be undertaken by machines. The machines are wholly mechanical and should not be expensive. Their use should go a long way toward solving the problem of teacher shortage and should make for better working conditions for teachers in general.

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"ON THE USE OF TEACHERS"

William C. Fels
President
Bennington College

(Preliminary Conclusions to be submitted to the Evaluation Committee)

I have been asked to present the principal conclusions of the committee to evaluate the thirty-five planning projects and experiments conducted under grants from the Fund for the Advancement of Education during the first year of the Better Utilization of College Teaching Resources Program.

I am handicapped in doing this by the incomplete state of the evaluation. If we had kept to our original time schedule, the Committee would by now have held its final meeting, and the final conclusions would have been reached. Unfortunately, at least for the evaluation, I was appointed President of Bennington College at just the time I was to write a draft of the Committee report. I discovered all too soon that a new president has a full-time job. It was only when the students left for the Christmas holidays that I was able to turn to the report. It is now partially, perhaps two-thirds, complete, but still in draft form. The first draft will be completed by the end of this month at which time the Committee will meet to arrive at its final conclusions and to make any necessary changes in the report.

Because of the incomplete state of the evaluation, I must point out that when I speak of the Committee's conclusions, I really mean my best guess as to what the consensus will be, based on the committee members' individual conclusions submitted in their reports to me.

The members of the Committee to evaluate the grants, in addition to myself, are Arnold B. Arons, Theodore Anderson, Henry Dyer, Ruth Eckert, Jonathan King, Hallett Smith, W. Blair Stewart, Fletcher Wellemeyer, Dael Wolfle and Robert Wert. You will recognize among these names active teachers in different fields, deans, psychometrists, officers of learned societies and foundation executives. It is, I think, a very able, tough-minded and diversified group.

One or more members of the Committee visited each project at least once. In some cases the original visitor returned a second time. In other cases a different committee member made the second visit. For example, the first visit may have been made by an expert in the subject being taught in the experiment and the second visit by an expert in evaluation.

We had a veritable flood of reports. Each committee member was responsible for reporting on certain individual projects, for a broader report on all projects of one type, and, after all these reports were circulated among the members of the Committee, for a summary report of all types of projects. The colleges submitted reports on their projects and the responsible committee members reported on these reports.

So, when I say that I will give you my best guess as to what the Committee's conclusions will be, you will recognize that it is at least an informed guess.

The time allowed here will not permit me to review all the different projects, or even all the types of projects for which grants were made, so I will first state some general conclusions and then review in some detail the experience with and the conclusions about the three types discussed this morning: independent study, television and teaching machines.

Was the whole program worth while? Yes. It will provide a great deal of necessary information on the better use of teaching resources, but more importantly, it has focussed interest on the problem and opened or reopened lines of research.

Was the method of administration of the program satisfactory? Partially. The wide-open invitation to submit proposals brought in some strange ones, including one to improve the use of teaching resources by providing members of the faculty with "Yogurt breaks" for the sake of their nutrition, but the invitation brought in enough excellent proposals to make it possible to try a variety of sensible and imaginative approaches at widely different institutions. On the other hand, the Program moved so quickly that inadequate attention was given to the need for competent local evaluation. Many useful, even necessary data were not collected. Consequently the results of experiments are often obscure.

Were ways found to make better use of teaching resources? This had better be answered with a "perhaps." Certainly time, energy and money were saved in some experiments. In others promising new developments were explored that will surely later produce savings. But if better utilization means better education as well as more economical education, some but very few of the experimenters would lay claim to having produced this.

It must be remembered though that this was the first year of a new Program. Only thirty-five projects were supported. The batting average, even by the tough measure of improvement in educational quality, was encouragingly high.

Did any particular type of experiment show more promise than others? (There were seven types: class size, independent study, machines, assistants, television, films and curricular studies.) No. They all showed some promise. What stood out was that particular applications may be more appropriate for particular colleges or subjects, and that combinations of the various types will probably be more useful than any one.

With this preamble, I will move to the discussion of the problems and promise of several of the types of experiments.

Independent Study Section

Four of the Fund's grants were for experiments in "independent study." This term has been used to characterize a variety of approaches. In a recently published book, Independent Study in the United States, Bonthius, Davis and Drushal distinguish three types of study, "the pursuit of special topics or projects by

individual students under the guidance of faculty advisers apart from organized courses," which they call independent study, the "credit-for-non-supervised reading type of work," and "tutoring."

None of the Fund-sponsored experiments fits neatly into any of these patterns. All were concerned with reducing instructor-student class contacts in order to place more responsibility on the student for his own learning and to release faculty time and energy. In two of the four experiments student discussion or study groups partially or fully replaced faculty instruction. In one, sub-groups of scholars studies entirely independently with neither faculty instruction nor student interaction. The experiments were conducted at Antioch, Grinnell, Marquette and the University of Michigan.

Placing responsibility on the student for his own education is a popular idea which is often closely linked to the observation that all education is self-education. President Aydelotte writing in the 1920's about the "honor system" he had introduced at Swarthmore said, "The important feature. . . is the fact that it puts more responsibility on the student. We think too much about effective methods of teaching and not enough about effective methods of learning. No matter how good our teaching may be, each student must take the responsibility for his own education, and the sooner he finds that out the better for him." The President of Brooklyn College, Harry D. Gideonse, has said that "all education is the fruit of self study and that all effective teaching is concerned with helping the students to help themselves." He added that "the net result of genuine educational advancement should be less teaching by the faculty and more study by the student."

It is also a very old idea which can be followed through the centuries from at least as early as Plato to St. Augustine, into the Renaissance, the Age of Reason, and through the nineteenth century.

Despite the long history of the idea and the distinction of its advocates we find few enduring examples of independent study at the undergraduate level. One discouraging reason is that the advocates of the idea are invariably teachers, and teachers, incorrigibly, teach. George Jardine, professor of philosophy at the University of Glasgow, quoted Locke approvingly as saying "The business of education is not, as I think, to perfect the Learner in any of the Sciences, but to give his mind that freedom and disposition, and those Habits which may enable him to attain every part of knowledge, himself." Professor Jardine explained that his views coincided exactly with Locke's, but he proceeded to outline a plan of education, most of which rested on strict discipline and rigorous mental exercises for the student under close supervision of hard-working professors.

This example points to a second reason for the paucity of independent study: as it is usually organized it produces more rather than less work for the faculty. Indeed it does this to such an extent that it raises the question whether it should not be called "dependent" or at least "individual" study rather than independent study.

Not all students are equally adapted to independent study, yet we do not know which are best adapted to it. In a rough way, we have assumed, perhaps wrongly, that

the well-motivated, the intellectually able and the further advanced are the likeliest subjects.

Socrates recognized that a period of introduction under the guidance of a teacher is a prerequisite for independent study. Indeed, if all were equally ready to study independently, all would be scholars. We would need neither schools nor teachers.

Independent study is time consuming not only for the faculty but also for the student. In the American college's framework of courses, the more demanding independent study cannot be carried on in connection with too many courses at once. If independent study is carried on in connection with course work, careful coordination among courses is necessary.

Independent study presents plaguing problems of evaluation. Informal, subjective evaluation is likely to be unreliable. The experimenters may suffer from euphoria, the faculty, as likely as not, from depression. The student subjects may exhibit a positive or negative "Hawthorne Effect:" they may obscure the results by consciously or unconsciously pulling for or against the experiment. Formal psychometric evaluation has its pitfalls, too. Few colleges are able, for such mundane reasons as class schedules and registration, to conduct entirely reliable and valid experiments. Personnel and measurement instruments are rarely adequate. Too much, too little and inappropriate testing are all ready snares. When the evaluation, informal or formal, is done, the results are open to question. Was it "real learning" that was measured? If there was no significant difference between the new method and the old, was the old worth-while in the first place? If there was a statistically significant difference, was it educationally significant?

The four Fund experiments all ran on one or another of the reefs that guard the shore of independent study. In no case was there a clear saving of faculty time. In one case there easily could have been, had there been sufficient enrollment. In another the institution thought time had been saved, but the observer couldn't find it. In the two other cases the time required to conduct the experiment obscured the picture. But in all cases the Committee felt that time would be saved in the long run.

One college, in a conscientious effort to avoid the Hawthorne effect, withheld knowledge of the experiment from the students. When they came to know about it their unfavorable reaction, which was reinforced by over-testing, plagued the experiment to the end.

At another college, where the experiment was thought highly successful by students and faculty who participated, able students pointed out that independent study was less well suited to the casually interested student than to the "major." At the same time average students who took part asked that they as well as abler students should continue to enjoy the benefits of independent study at their own level and pace. They felt that the distinction between "majors" and the casually interested was valid, but that a different distinction should be made between the able and the average student.

Whatever the level of interest or ability students felt the need to be introduced to the methods of independent study. They did not wish to be thrown into it "cold."

The Committee observers agreed with them fully. The experiment which in the opinion of several members of the Committee holds the greatest promise of future time saving and improvement of educational quality devoted, in effect, a full semester to preparing first-term freshmen for later independence.

One of the experiments, in the opinion of the Committee, provided an example of independent study at its worst. One member of the Committee compared this experiment with the one mentioned in the preceding paragraph: "The juxtaposition (of these two experiments) dramatizes the crucial role of the teacher and his concept of education. (In the first experiment, the teacher) apparently understands what it means to frame questions and present problems which will force the students into a modicum of intellectual effort and into "studying to understand meaning." In (the other) they study to parrot nuggets remembered from a single text. As far as I am concerned (the second situation) is a travesty of the entire educational concept. The students are being tested on fragmented trivia -- not on ideas, concepts and relationships -- and are thus being informed that the trivia are important rather than the ideas."

The Fund experiments in independent study, few in number and plagued with problems, can furnish only limited evidence of the value of independent study plans, yet in the opinion of the Committee they justify fully both the Fund's investment and a considerably broader program of experimentation along these lines.

The conclusions of the two members of the Committee who devoted special attention to the independent study experiments will bear recording: "Independent study should in no sense be regarded as an educational panacea providing an easy or quick solution to college instructional problems. It should likewise not be viewed as a glorified 'do-it-yourself' plan for getting a college education, eliminating the need for skilled teachers. Individual faculties need to develop programs of independent study suited to their own philosophies of education and to their particular interests and abilities. Students likewise need preparation for effective use of these opportunities. The earlier independent study can be introduced, the greater would appear to be the values occurring from its use. Successful use of independent study requires a wider variety of resource material than may be demanded in conventional teaching. Searching appraisals also take on new significance, since they help to set high expectations for students' work and to yield evidence as to how the plan is functioning."

Television Section

The television experiments in the Better Utilization of College Teaching Resources Program are not the only TV studies supported by the Fund for the Advancement of Education. They are, in fact, the smallest in scale, and, though important, the least dramatic. This might be expected from the upper limit of $25,000 set for any grant within the Program. Experiments on a larger scale are being conducted at Chicago Junior College, Fisk University, Pennsylvania State University, New York University, San Francisco State College, Stephens College, the University of Minnesota and by the Oregon State Board of Education. Still other experiments are being sponsored at the secondary and elementary levels. These pro-

jects are outside the scope of the Committee's responsibility. This Report does not attempt to evaluate their promise or, except incidentally, the promise of educational television generally. It is confined to the three projects within the Program, those at Case Institute, Purdue University and the State University of Iowa.

These three projects all employed closed-circuit TV as a means, but to different ends. Case was testing the thesis, in the words of a Committee observer, "that the way to make closed-circuit TV work as a medium of instruction is to design a two-way system that is cheap, that is highly mobile, that is operable by rank amateurs, and that is adaptable to just about any classroom conditions imaginable--bum lighting, nervous teachers, shy students, awkward operators." (The Committee observer added, after his first visit, "I saw the system in its third day of operation and got the full treatment -- bum lighting, shy students, awkward operators. The teacher, however, was in full command of both himself and the situation.") The Case project had other purposes as well, among them to test different degrees of student participation in discussion, to experiment with the use of several small television-connected classrooms in place of one large lecture room, and to try television in a variety of teaching situations in which it might have special usefulness: in demonstrating remote or dangerous materials or giving a close view of an object or process to every member of a class. But the main effort was toward the development of an inexpensive, flexible two-way (teacher-to-student and student-to-teacher) visual and oral-aural communication system.

The principal experiment at Case and the experiment at Purdue were conducted in Chemistry courses.

At Purdue the effort was to substitute television, and to a lesser extent other aids--films, slides, tapes, mimeographed instructions -- for some of the functions performed by instructors in laboratory sections. The Committee observer's description of the situation which gave rise to the experiment will serve to describe the experiment and to glimpse into the future. Though perhaps not typical the situation at Purdue is by no means unique. It is also virtually certain to become more common as enrollments increase: "General Chemistry is a basic requirement for practically all undergraduates in the different schools of the University. The course enrolls 2000 students now, and the frightening expectation of the responsible people is that its enrollment may reach 8000 in the next ten years. The big problem is how to staff the laboratories. Hitherto it has been the practice to organize the General Chemistry course into sections of about 23 students each and to assign three or four sections to an instructor -- usually a graduate student. A section meets ordinarily five hours a week -- two one-hour recitations, and one three-hour laboratory. In addition it comes together with other sections for about a dozen large lecture-demonstrations which are distributed over the entire year. Under the prevailing system, a section has the same instructor in both the recitation periods and the laboratory periods. Under the new experimental system the plan is to put three sections at once into a single large television-receiver-equipped laboratory holding 70 students and to leave only one of the section instructors in charge. This would mean that an instructor handling four sections would be relieved of nine hours of laboratory duty each week which could be spent in handling more recitation sections or in research. Since the bulk of the instructional load in General Chemistry is handled by graduate assistants, one may

wonder why the solution of the numbers problem would not be found in simply hiring more graduate assistants. The answer is direct and simple: there are scarcely enough of them now, and there are likely to be fewer later on. Furthermore excessive laboratory loads for such people tend to make them go elsewhere."

The State University of Iowa conducted its experiment in American Government and Modern Literature courses. Like Purdue, Iowa had become concerned with rising enrollments. It seemed doubtful to them". . . whether staff and facilities can be found to do a great deal of teaching by the discussion method unless some technique such as closed-circuit television can come to the rescue." But unlike Purdue, Iowa used TV as a means to compare several methods of instruction: small group (18-29) discussion, large group (75) discussion, television discussion (about 75 students divided into three groups), television observation (about 25 students), and lecture (about 125 students). In the television discussion arrangement there was two-way communication between teacher and students. Students in remote rooms could participate in discussions. In the television observation arrangement, students in a remote room could observe but could not participate in discussion, except vicariously.

What was learned from these three projects? Viewing the Case experiment as an attempt to devise an inexpensive, unobtrusive, two-way communication system between small classrooms, the Committee and the Institute would certainly agree that the attempt fell short of success. At one point the technical inadequacies of the system became so obvious that the whole project was suspended for a month. The Chemistry course went off TV and back into conventional methods. During this period special lighting was introduced and TV cameras and monitors were more permanently installed. Instructions were prepared for television teachers. These changes produced considerable improvement, but only by compromising the simplicity, unobtrusiveness and flexibility that were desired. In spite of the improvements the system retained serious weaknesses of sight and sound. The picture of the instructor seen by the remote classes was poor. The picture of the remote classes seen by the instructor was not clear enough for him to distinguish who was asking a question. The sound arrangements were such that students in one room could not hear the questions of students in other rooms. While the instructor listened to the questions, there were annoying pauses.

The Case experimenters are hopeful that these difficulties can be overcome. If they can the Case experiment will have made a useful contribution. There is an obvious advantage in inexpensive, flexible equipment. There is also a not-so-obvious advantage in a system adapted to many small classrooms: this is the way most colleges are built. Large classrooms are few and the transformation of small classrooms into large ones is expensive, where possible at all.

Yet there is an inherent limitation on the extension of discussion to a large number of small classrooms. The number of students who can participate actively in discussion must have some ceiling. This limit is probably not raised by multiplying small groups. What this limit is we do not know, but experience tells us that as the group is enlarged discussion decreases and the lecture gradually takes over. There is, then, some physical limit to the usefulness of TV-interconnected small groups as a means of ameliorating the teacher shortage.

One lesson of the Case project is that experiments with equipment contaminate the results of experiments with educational methods, when the two types of experiments are carried on together. Faculty and student attitudes and student achievement may be affected by either equipment or methods. If they are, it is difficult if not impossible to tell whether the equipment or the method was responsible for the change. Experiments with educational methods should use the best equipment available. Where purchase is not possible rental may be satisfactory. Experiments with equipment should be conducted whenever possible outside regular classroom situations, unless there is assurance that pre-specified technical standards can be met. Where as at Case, it is necessary to carry on experiments with equipment in classroom situations to determine the technical standards that must be met, little reliance can be placed on the comparisons of educational methods. (The comparisons of method were not yet available at the time of writing this Report.)

The experiment at Purdue with a single large television equipped laboratory, in which one instructor served seventy students, produced, on the whole, promising results. Student achievement appeared not to be adversely affected. Students and faculty expressed moderate satisfaction with the experimental techniques. The equipment performed satisfactorily. Instructor time was saved.

There were many suggestive findings, some favorable, some unfavorable, that can only be sampled here. A variation of Parkinson's Law, "Work expands so as to fill the time available for its completion," seems to affect students' use of laboratory instructors. The students will use the full time of as many laboratory instructors as are available. When there were three instructors in the laboratory the students used the time of instructors by asking questions which had been answered in the TV presentation. When two instructors were removed, the number of questions was reduced, but the students felt they had enough help available. The better students were somewhat less favorably inclined toward TV than the poorer students. Purdue experienced the same difficulty that others have with student passive "listening."

The Purdue experiment provides an opportunity to point again to a basic problem that troubled the Committee from the outset. The Committee's own knowledge, or prejudices, led it to favor certain methods of teaching over others. Suppose that a college, before beginning an experiment, used a method less favored by the Committee. If the experiment enabled the college simply to carry on this method more economically, was the experiment promising? Or was it only promising if it enabled the college to carry on a more-favored method more economically? The Committee decided to apply a triple standard. If it could not stomach the method, it considered the experiment unpromising no matter what the economy. If the method was generally used and widely accepted, the Committee considered an improvement in teaching economy promising, even though the Committee did not wholly approve the method. This was a simple acceptance of the fact that not all teachers are or will be superior, and that there are and will be situations in which a superior teacher cannot use techniques he knows to be superior. Finally, the Committee accepted as promising, and with a recognition that this was a greater good, a more-favored method which also produced teaching economies.

The Purdue experiment fell in the Committee's second category, a less-favored method used in an experiment that produced teaching economies. The method used at Purdue, though less favored by the Committee is widely used and accepted.

Excerpts from a Committee observer's report will illustrate the Committee's dilemma in evaluating the Purdue and other experiments: "This is an essentially conventional general chemistry laboratory course, although a concerted and imaginative effort is being made to introduce new experiments which would be more interesting and stimulating to the students than those usually used in such a program. . . The TV presentation does not 'do out' all the details, but the students are supplied with a very detailed mimeographed 'cook book' which they simply have to follow step by step, and they are given a report form to fill in, which contains an outline of the necessary calculations, including explicit indications about intermediate steps. . . This is a perfectly conventional procedure. If one accepts the previse that this is the way chemistry laboratory has to be done, then the project is proving quite successful. One instructor with a group of seventy-odd students seems to be able to answer the questions which arise, and two instructors are relieved so that their time can be assigned to section meetings. . . If, however, one sets a different standard and level of objectives for a laboratory course . . . the situation would take on a different appearance. For example, it is my observation that students in their early laboratory experience do not ask significant questions in the first place (they come to the instructor and ask what shelf the sulfuric acid bottle is on) and that if the job of the instructor is to be present and wait for questions, one instructor can easily handle between fifty and a hundred students. (But if the job of the instructor is to) go around and ask the students questions in order to lead them into an awareness of various ideas and problems, this takes something like one instructor to fifteen students. Then the horizons can really be broadened; and this is not spoon-feeding unless the instructor simply tells the student what to do, and then he is an incompetent instructor. . . One's evaluation of the Purdue experiment depends entirely on the reference framework he adopts. If one accepts the need and inevitability of the 'conventional approach' the Purdue experiment is to be considered successful in terms of better utilization of teaching resources. . . One would then view the Purdue procedure as a reasonable and sensible compromise with the exigencies of the situation. . . but I would find it hard to add a claim of improvement in the fundamental educational experience. . . "

The experiment at Iowa with different methods of instruction -- small and large group discussion, television discussion and observation, and the lecture -- showed no significant differences in student achievement among the various methods. But here, as in other experiments in the Program, neither the experimenters nor the Committee were satisfied with the tests used as measures of achievement. This criterion problem, which keeps cropping up, will probably always plague educational experimentation. Statistical significance at a certain level simply means that the same result would not be achieved by chance in a certain number of trials. The statistical significance or lack of it is related directly to the measuring instrument. If the measuring instrument doesn't measure what is educationally significant, one can end with a statistically significant, educationally insignificant result. Usually, and this was true at Iowa, we find no statistically significant difference between methods but we don't know whether the results are or are not

educationally significant. From this point we can move in either of two directions: toward the more economical methods, on the ground that economy should rule until a difference can be proved; or toward whatever method -- economical or uneconomical -- subjective evaluations, attitudes or opinions lead us. Circumstances may rule which of these two directions we take.

At Iowa there were statistically significant differences in student opinion of the different methods used to teach the American Government course. Students preferred a course taught at least partially by the discussion method. Beyond this it appeared that experience with receiving instruction by television tended to make students more favorable to this method of instruction. The results in the Modern Literature course were much the same, achievement as measured was comparable; students expressed a heavy preference for discussion; television instruction tended to make students more favorable to this method. On the other hand television students were not generally favorable to the method, they also perceived their method as requiring least preparation for class, they felt they were stimulated to the least thought, competent reading and discussion; and they felt most frustrated in their desire to participate orally. The experimenters in Modern Literature at Iowa felt the disadvantages outweighed the advantages and that there was "no evidence to justify the use of closed-circuit television for discussion, as it was used in the Modern Literature course."

In the exposition so far, the three television experiments present a discouraging picture: no cheap and easy television system has been perfected; laboratory work presented by television does not come up to the highest standards; the extension of television to many small classrooms has inherent limitations; and students and faculty prefer live discussion to television discussion or observation.

Yet we must not overlook the possible gains: the Case experimenters made some progress in the use of inexpensive television equipment and expect to make further progress; the Purdue laboratory work was excellent by conventional standards and made possible marked savings of instructor time; there was at least no measureable difference in student achievement among the methods of instruction used at Iowa.

These may be small and even doubtful contributions to the better use of teaching resources, but it should be remembered that these were first efforts, hampered by inexperience and working with a new medium that students and faculty almost instinctively suspect.

The members of the Committee emerged from their study of the television experiments with what the reader may feel was a quixotic enthusiasm both for the experiments and for television experimentation generally. The experimenters had a satisfying honesty and a willingness to cope with fundamental problems that was infectious. For the Committee the experiments opened the door a crack and let them see what promise television might have.

Teaching Machine Section

Of the thirty-five experiments in the Better Utilization of Teaching Resources

Program, ten involved the use of mechanical or electronic aids to teaching. Of these, six used instructional film or closed-circuit TV. Of the remaining four, two used tape recorders in connection with language instruction, one used a tape recorder synchronized with a slide projector and supplemented by a specially constructed test-scoring machine, and one used a newly devised teaching machine to assist in the learning process.

Referring to the last of these, one of the members of the Committee wrote: "The realm of connotation surrounding the term 'teaching machine' is so obviously brave-new-worldish that one must approach this project with a conscious effort to subdue emotional reactions and preconceptions. The machine is not calculated to generate human machines. As a matter of fact 'machine' is probably a misnomer, since the device is really an individual visual aid which gets a direct response from the student.

Besides the unfortunate cultural connotations of "machine," the word has unpleasant overtones for teachers. Films must be scheduled in advance and projected in special rooms. Projectors break down. Slides require time for selection and have a willful tendency to appear on the screen upside-down. Tape recorders are heavy. Test-scoring machines limit one to objective questions. In short, to many teachers machines are a nuisance or worse.

And yet many great teachers, in the age before machines, looked upon the methods they were devising as mechanisms which would produce superior educational results without a teacher, or with an inferior or overburdened teacher. Compayre' writes that "The purpose of Pestalozzi was indeed, in one sense, as he was told by one of his friends, to mechanize instruction. He wished in fact to simplify and determine methods to such a degree that they might be employed by the most ordinary teacher, and by the most ignorant father and mother. In a way he hoped to organize a pedagogical machine so well set up that it could in a manner run alone."

Of course this is a machine in another sense, but its purpose of yielding a better quality product with less use of the time of able teachers is in accord with present experiments.

Comenius, in The Great Didactic, describing his program for the introduction of textbooks which "should constitute a complete, thorough and accurate epitome of all the subjects of instruction," says, "They should . . . give the scholars sufficient assistance to enable them, if necessary, to pursue their studies without the aid of a teacher."

The present experimenters with machines have more modest aims than had these great teachers. The experimenters' devices are not designed to supplant the teacher but to supplement him and to multiply his usefulness. In the analogy with the worker, the machines are the capital equipment through which the teachers' productivity, his earnings and his leisure can be increased. The aims of the experimenters may be more modest but they are no less concerned with quality than were their distinguished predecessors.

Among the thirty-five experiments, the Committee found Harvard Professor B. F. Skinner's teaching machine the most intriguing. It may also be the most promising

of qualitative improvement in learning combined with quantitative savings of teaching. In addition it has possibilities of producing valuable secondary effects.

Professor Skinner gives this description of the machine and its operation: "The machine is a mahogany box with an anodized aluminum cover. The student inserts a 12-inch disc bearing printed material in radial sectors. This material is exposed to the student one sector at a time in the opening at A. In the opening at B the student can write a response on an exposed portion of a strip of paper feeding from a spool. The material in the sector gives the student certain instructions. When he has written his response, he lifts the knob at C. This moves his written answer under a transparent cover at D and exposes the correct response at E. The student then compares his response with that indicated on the disc. If he is correct, he moves the knob to the right. This punches a hole opposite his answer on the slip of paper, leaving a permanent record of the fact that he called that answer correct, and at the same time altering a detent under the disc which reduces by one the number of times that sector will be presented through the opening. The machine can be set to require either one or two correct answers for each sector. When the knob is returned to its starting position, the next sector is automatically presented. The box is locked during operation so that the student cannot lift the lid and look at the disc. When he has worked his way around the disc, he starts around again. The sectors he has correctly answered (once or twice, as the requirement may be) are eliminated until at last the disc goes around without stopping. This completes the assignment. The student can then open the box and draw out the tape bearing his answers. He tears this off and returns it with the disc to a file clerk. A record is made of the disc he has completed. When he again appears for study, the next disc in the series is given to him. By signing up for time on the machine, the student can complete the material required during a term without further assistance. If the tapes he returns are unduly long, it is clear that he is having trouble, and his work should be inspected by the instructor. Otherwise the machine instruction proceeds without further supervision, leaving the instructor in a position to teach less routine aspects of his subject."

The Committee was intrigued by many features of this experiment. It is rooted firmly in psychological theory which in turn is supported by experiment. It is not the first or only teaching machine, but it is the only one usable in higher education which elicits a free response from the student: he is not limited to a selection among presented choices; indeed he is not offered any. It is adaptable to a variety of subjects and to complex as well as simple thought processes. The "programming" of the machine presents a challenge to the clarity and orderly progression of instruction which could have good effect on text-book writing and live teaching.

The Committee's enthusiasm is based largely on promise rather than performance. The experiment, in its first year, was confined to the construction of machines, working out methods for their use and devising trial programs in physics, psychology and language. Controlled experiment with students is to come later.

While enthusiastic about Professor Skinner's machine, the Committee was aware of its possible limitations: can it avoid the fragmentation of knowledge? Will the student see the pattern of the studies he is following? Can the machine lead the student to formulate his own questions and thus take a step toward independence of

thought? Will it encourage memorization rather than understanding? Will the students become dependent on the machine? These questions, and many others, remain to be answered. But when it is remembered that the machine is to supplement not to replace live teaching, these questions do not shake the Committee's confidence in its possibilities.

Montana State College conducted an experiment of an essentially different kind. A botany course was offered to the experimental groups of students with the aid of two specially devised machines, an improved synchronized tape recorder-slide projector and a unique test scoring machine. These machines took the place of an instructor in three of the five weekly meetings of the course. The course was taught by the "Ohio State method:" Instead of separate laboratory periods, plant materials, microscopes, etc., were used during the regular class sessions. Provision was made for demonstrations conducted by the students themselves or by graduate assistants, and for student review of slides in a specially arranged room. The Montana experimenters had the same experience as Professor Skinner with their "program." They found themselves forced into a careful consideration of the logic, sequence and economy of their presentation.

There were two experimental groups, two control groups and a fifth group taught by both methods. The preliminary evidence is that the experimental groups did significantly better than the control groups. The students liked the experimental method. The group which had experience with both methods elected to continue with the experimental method. There was a clear saving of nearly three-fifths of the instructor's time.

The test-scoring machine bears description. It is essentially a simple, rugged, inexpensive multiple punch. It is easy to set it to score different tests. The student is given a test of objective questions which he answers on a prepared answer sheet. He places the sheet in the machine and pulls a lever. The machine punches all the correct answers. (It does not simply give a score, as do most test-scoring machines.) This enables the student to know and study the correct answers to the questions he failed. The answer sheet has space which may be used for essay-type questions, but these must, of course, be graded by the teacher or an assistant.

The Committee felt that this experiment, which grew logically out of extreme instructor time pressure, held unusual promise for the better use of teaching resources. Not only was a material amount of teaching time saved, but the quality of instruction, good to begin with, was apparently enhanced.

The two remaining machine experiments, at Stanford and Sweet Briar, involved other considerations, such as class size and the use of assistants, as well as machines. The machines in these cases were the now familiar electronic disc and tape devices used as aids to language instruction at 200 or more colleges. Since these machines are well known and widely accepted it does not seem necessary to describe them or their advantages.

"We may conclude," wrote one of the two members of the Committee with special responsibility for the machine projects "that the various mechanical and electronic devices used in the Better Utilization of College Teaching Resources Program are

an important and promising part of this experimental program. Some have already saved teacher time, and all can serve in this way. More importantly, however, they promise in varying degree to improve the quality of teaching. They make it necessary to rethink the problems of teaching: the definition of objectives, the careful planning of the teaching program, the close study of how learning takes place, the evaluation of new approaches. And especially they encourage experimentation. Curiously enough, the simplest ideas and devices seem to give the greatest promise of significant results. . ."

The overall reaction to the machine experiments was "that good equipment and techniques offer a very promising prospect of removing a great deal of the rote learning from the classroom and freeing the teacher for more productive activity. This could lead to a substantial improvement in the utilization of teaching resources; the promising aspects should be heavily underlined, and utilization of these techniques strongly encouraged.

"If courses begin and end with rote learning (as is frequently the case anyhow), that is too bad, but I do not see that the machine techniques in themselves endanger or preclude the possibility of providing real educational experience. . . In fact I am attracted to the concept largely because it can help provide more opportunity to utilize the contacts and time consuming methods which are so important in the genuine educational enterprise."

GROUP CONFERENCES

Group I

Leader: Dean Howard S. Greenlee
Park College

Recorder: Dean Cohen T. Simpson
Talladega College

Consultant: Dean Raymond A. Withey, Jr.
Drew University

Group I had its conference in Conference Room A of Hotel DiLido beginning at 2:20 p.m. on Tuesday, January 7, with nineteen persons present. In his opening remarks, Dean Howard S. Greenlee, our leader, suggested that since most of the small colleges had no problem concerning closed circuit TV, it might be more profitable for us to start our discussion on problems concerning scheduling. He then raised the question, "Has anyone done anything in the nature of scheduling or curriculum looking toward a more efficient use of the teaching resources."

The discussion was started by Dean George C. Seward of Oglethorpe University. He pointed out that his school had started a system of no new courses. In fact, the faculty was attempting to reduce the number of courses already offered. It appeared to be more difficult to reduce the number of courses in the sciences than in the other fields because of the traditional sequences of science courses. This is not true in the other disciplines.

Dean William F. Quillian of Randolph-Macon Woman's College called attention to the fact that Antioch College had set up pilot courses in which teachers met class once or twice a week instead of three. These courses carried the same amount of college credit as before for the student, but more work was shifted to the students. This freed the teacher for research and other personal activity. The system gave promise of being financially profitable also, as it could lessen the number of teachers needed.

Dean George A. Christenberry of Shorter College pointed out that his college used a system of independent study for courses needed by one or two students. These were mainly reading courses checked by instructors. Shorter College felt that this program was successful.

The question was raised as to whether a system of independent study did not actually take more of the teacher's time. It was admitted that a teacher must spend much time in building an outline and working out a bibliography. After this, then, perhaps less time was consumed.

Dean Raymond Withey of Drew University, our consultant, pointed out that qualified seniors placed in charge of laboratory work in the sciences sometimes works. Dean Greenlee pointed out that at Park College every student works. Usually the start is with menial tasks. Then the student works his way up to

maybe an assistantship. A student may be assigned to a teacher for clerical work, thus freeing the teacher from some routine. This plan has worked.

Sister H. Eileen called attention to the fact that this plan works best when the student is assigned to a particular teacher. It does not work well when the students are in a pool because then the student does not feel responsible to anybody.

Dean M. A. Miller of Union College states that they have a system of placing students who for reasons do not quite qualify for scholarships into a pool. These students are used as needed. They are assigned to teachers for the period of need. They earn from fifty to seventy-five dollars a year.

Dean Martha S. Grafton of Mary Baldwin College then raised the question of how to motivate a weak student for independent study. She could understand how the good student was motivated, but was disturbed about the weak student.

The question led to a tangent on whether the independent study program was designed to eliminate the teacher. Dean Rogene O. Weathers of John Brown College stated that the program was designed to eliminate some teachers, but not all teachers. At his school, the program had enabled them to replace ten teachers who were leaving with six. These six carried the same course load for the school. There is something of importance which will be lost when good teachers are eliminated.

Dean Clinton D. Hamilton of Florida Christian College commented on a statement made in the morning session which contrasted effective learning with effective teaching. His comment was to the effect that the two were inseparable. A classroom with a good teacher stimulates more learning than independent study could. Much depends on the techniques of the teacher.

Our consultant then stated that the technique used by a teacher must be the technique that he can best handle. The good lecturer should lecture; the book writer must write. In the case of a good lecturer, large lecture sections might be provided. Unfortunately, major courses on the upper level do not have many students.

Sister Eileen reported a case of a student in history taking a reading course in his field under a teacher of sociology. This freed the history teacher.

Our consultant observed that sometimes when a teacher was freed by any of the means mentioned above, the teacher used his time in other employment to supplement his salary. This should be watched. A possible solution could lie in paying teachers a livable salary, and insisting that they not take employment elsewhere.

Some pertinent questions for which no specific answers were given:

How can we save faculty time and save quality also?
How many courses can a teacher teach?
Do all courses have to carry the same amount of credit?

The leader then thanked those present, commended them for the nature of their participation in the discussion, and brought the session to a close.

Respectfully submitted,

Cohen T. Simpson
Recorder

GROUP CONFERENCES

Group II

Leader: Dean Sidney J. French
Rollins College

Consultant: Dean B. A. Rogge
Wabash College

Recorder: Dean Harriet D. Hudson
Randolph-Macon Woman's College

Apparent throughout the discussion in Group II was the success of the morning's three speakers in arousing the deans' interest in further contact with television, the "think machine", and independent study. Two questions were raised repeatedly. Can a college find in these new methods any relief from the shortage of good teachers? Can it achieve through their use an improved quality of teaching?

For the present, television seems to provide no relief for the small college which has difficulty in finding enough teachers. In the first place, televising requires prolonged preparation of each lecture. For example, at Chatham College teachers had found an hour of preparation necessary for each minute spent telecasting. (Among the colleges represented in Group II, this was the only one which had handled a schedule of televised lectures.) There is no saving of a teacher's time.

A second limitation on TV is the heavy financial outlay involved. For the small college this probably would be prohibitive unless some extraordinary source of funds could be tapped or several neighboring colleges could pool resources in a cooperative venture.

In more optimistic vein, it was suggested that some films prepared for use on educational TV might well be rented or purchased for showing on a standard movie projector. Instruction by the best teachers might thus be enjoyed at times on any campus.

The deans discussed at some length the kinds of stimulus which telecasting can give to good teaching. For example, when his lecture is to be televised, a teacher knows that not only his students but also his colleagues may see and hear him. He has to use efficiently every minute assigned to him. He knows he must prepare his text carefully and deliver it well. Several deans had seen these same effects when two or more teachers regularly shared instruction for a course that was not being televised.

Cutting across the questions of quantity and quality of teachers was the possibility of extending the able teacher's effectiveness by relieving him of routine functions. Can TV be substituted for manpower in remedial and rote work and thereby free the teacher for more hours of creative work? No one in the group had had experience for evaluating the results when a college telecasts lectures in subjects currently assumed to be learned best through personal contact between teacher and class.

Throughout the discussion, Dr. Rogge repeatedly raised the question of the primary function of the small college. Should not the institutions represented in Group II recognize that the basis of their uniqueness is their opportunity to stimulate students to formulate values? Is not the quality of the faculty members the key to our contribution to American education? Can the ratio of teachers to students be lowered without losing some of the effectiveness which the small colleges attribute in part to this very factor? Is extensive use of TV appropriate, even if it is financially possible, on the small campus?

Countering these questions was another, which the group found sobering. Is there danger that educational TV will become the tool of outside agencies which seek to propagandize rather than to stimulate independence of thought? If the colleges and universities do not assume the responsibility for this medium, they may soon find that someone else has.

The members of Group II expressed lively interest in Professor Skinner's "think machine" as a study aid and as a supplement to a teacher's direct instruction. The machine seemed especially attractive for use when students must be drilled in the fundamentals of a subject, for this part of teaching is not apt to be enjoyable. To the extent that the use of the machine can make the role of the teacher more attractive, it may eventually remove an obstacle to some persons who consider entering the profession. It was recognized that the use of this device might improve the quality of teaching if an instructor does his own programming, for the selection and wording of questions calls for analysis of a high order.

Time ran short for discussion of independent study. It was thought to be a means of enriching the educational experience of some students rather than of economizing the teacher's time.

Implicit in all that was said was the conviction that the good teacher is the college's greatest asset, the "pearl of great price" for every dean.

Respectfully submitted,

Harriet D. Hudson
Recorder

GROUP CONFERENCES

Group III

Leader: Dean Nancy D. Lewis
Pembroke College

Consultant: Dean Ivan M. Stone
Beloit College

Recorder: Dean R. H. Norton
Grinnell College

The discussion at first centered on the use of television as a means of making more efficient use of teaching resources. It was suggested that an extensive reliance on television and films was perhaps incompatible with the individualized instruction usually considered to be one of the chief values of education in a small college. It was recognized that television might be used to bring the services of the faculty to populations outside the college. A contiguous group of small colleges might well share teachers to mutual advantage by means of television, although on this point one dean remarked that in an area where this is now being tried by fifteen colleges, the students so far have not shown much enthusiasm for this method of instruction. It was pointed out that television as a teaching device calls for a great deal of time spent in preparation by the instructor, and also involves the services of trained personnel as well as the use of expensive machinery. It would seem, therefore, that television teaching programs should be kinescoped and used several times in order to reduce the cost of the original productions. One person remarked that little would be gained by getting rid of the yellowed lecture notes only to have them reappear as yellowed kinescopes and film strips. It was agreed that at present the cost of getting the technical skill needed for the successful operation of television as a teaching instrument makes its use impractical for most small liberal arts colleges.

Less expensive mechanical devices, however, such as tape recordings may be used to advantage in small colleges. Some teachers tend to reject the use of audio-visual aids in teaching, without understanding their possibilities. Language teaching, in particular, can benefit from the use of tape recordings.

The discussion then moved on to consideration of the re-organization of the curriculum in order to use teachers more effectively. It was agreed that most liberal arts colleges would benefit from a thoughtful pruning to eliminate unnecessary course offerings and duplication of effort. The students might get better education if they concentrated their efforts on a limited number of courses of high quality. The notion that all classes should be small in order to be well taught should be re-examined. Possibly, in some situations, the size of classes could be increased without reducing teaching effectiveness.

The use of teaching assistants was discussed. Although small colleges with no graduate programs are deprived of the use of graduate students as teaching assistants, most college communities have in them untapped resources "outside" the college. Educationally qualified housewives and personnel in various pro-

fessions and industries might be willing to serve part time as teaching assistants. It was agreed that there were limitations and dangers in the use of senior undergraduates as teaching assistants, although in certain subjects under careful supervision, they might be used effectively. Several persons indicated that perhaps the chief value to higher education in the use of undergraduates as teaching assistants was not so much in the saving of faculty time as in recruitment of valuable persons in the teaching profession.

The visiting of class rooms by deans and departmental chairmen as a means of increasing the efficiency of teaching was also discussed. It was pointed out that the departmental chairman because of his knowledge of the area of instruction was perhaps better equipped than the dean to evaluate teaching performance. In some colleges faculty members do not like to have visitors to their classes, although interdepartmental work tends to break down this reluctance. On the other hand, in some colleges, visiting by the president, the dean, faculty colleagues and parents is a well established custom.

The evaluation by students as a help to effective teaching was mentioned. Some skepticism as to the value of the usual rating devices was expressed. At one college, it was customary for students and the instructor in each course to spend a class period at the end of each semester discussing teaching effectiveness.

The group spent the remainder of the time evaluating independent study by students. It was noted that since both students and teachers have been accustomed to a method of education involving close supervision and guidance, there may be some danger that experiments in independent study will develop into dependent study organized on an individual basis.

It was agreed that the freshman year in college should be used to develop more self-reliant study habits. It was pointed out that independent study did not necessarily involve individualized study programs, but by means of a carefully prepared syllabus students could be assigned a program of study and research which they could carry out independently. Independent study programs may well bring about an increased use of library facilities and consequently an increase in the teaching functions of librarians. Effective independent study programs might involve cutting down the number of courses a student takes in any one semester. It was generally agreed that independent study programs were particularly adapted to liberal arts colleges with small classes and close personal relationships between faculty and students.

Respectfully submitted,

R. H. Norton
Recorder

GROUP CONFERENCES

Group IV

Leader: Dean David E. Henley
Earlham College

Consultant: Dean William L. Dunn
Lake Forest College

Recorder: Sister Angela Elizabeth
Emmanuel College

Dean Henley opened the discussion by suggesting that the group list the areas that they would like to investigate. The following general questions were proposed:

1. Would we lose our particular quality as teachers if we adopted some of the new methods of instruction, such as television, film strips, and teaching machines?

2. Are the faculties of our colleges willing to participate in experimentation of the kind proposed?

3. Have any studies been made to show that these experiments actually save time?

4. Will a professor be effective as a teacher if he lectures by machine and has assistants correct his papers?

5. Is it enough to love the subject matter that is taught while dis regarding the teacher-learning process? Should we not have some sort of pride in craftmanship in teaching?

The group decided to discuss first the question of the effectiveness of a machine in the teacher-learning process.

It was generally agreed that the use of machines in the language workshop is most effective and to be recommended. The use of recordings in the teaching of English Literature and Music Appreciation has long been recognized as a valuable aid in stimulating interest and developing an understanding of the works reproduced. Tapes and slides and films are also of great service in teaching science.

There was not such general agreement on the subject of the use of television as a substitute for the traditional classroom lecture - discussion procedure. Those who favored its use gave the following reasons:

1. Through the use of television it is possible for all students in colleges in any given area to enjoy the advantages of contact with master minds in the various fields of knowledge. The great professors can be shared with th ousands of students.

2. Teachers will feel the challenge of the great professors who have reached a high degree of competence in their fields. They will be stimulated to greater effort.

3. Television is a substitute for books. Those who oppose its use should remember that books were considered as "visual aids" when first introduced into classrooms.

4. Television relieves the teacher for the more important work of guiding the students in independent study.

Other members of the group voiced opposition to the use of television for definite reasons:

1. The use of machinery lessens the responsibility of the teacher and decreases the respect of the student for him.

2. It is difficult for the teacher to check the efficiency of the students in this method of teaching.

3. Television cannot always hold the attention of the student. A great deal of quiet sleeping is possible.

4. The timing of classes to meet the hours of television programs offers problems.

5. The important function of the teacher as guide and counsellor of the students has no part in television lectures. The personal influence is gone.

The conclusions that were finally reached on the subject, after both sides had been weighed, might be summarized under three headings:

1. The machine is effective for certain areas of knowledge.

2. A moderate use of television is to be recommended to meet the teacher shortage and to relieve the instructor for more important work.

3. We seem to be entering upon a new era in education in which the students will be trained to do independent study. The teacher will use all the mechanical devices available so that he may have free time to guide the student and help him to coordinate his knowledge.

Respectfully submitted,

Sister Angela Elizabeth
Recorder

GROUP CONFERENCES

Group V

Leader: Dean William Taeusch
The College of Wooster

Recorder: Robert E. L. Strider
Colby College

Consultant: Rev. Joseph A. Sellinger, S. J.
Georgetown University

It was proposed at the outset by the Chairman, Dean Taeusch, that this group, in which administrative officials of only relatively small colleges were represented, concentrate discussion on independent study projects. The group agreed that because of the size of the colleges involved this would in general be a more fruitful area of discussion than TV education, films, or teaching machines.

The Chairman first brought up for discussion one of the perennial problems involved in giving greater independence to the student: namely, the possible actual increase in faculty teaching load. Faculties always resist the idea of larger student loads; yet how is this to be avoided when expansion takes place if one wants to increase salaries rather than expand the faculty? One of the peripheral matters briefly explored was the possibility of scheduling more class times: beginning earlier in the morning (some as early as 7:45), extending later in the afternoon (some as late as 5:20), and utilization of the noon hour.

Dean Alexander of Antioch spoke up at this point and observed that he would be glad to deal with questions that might arise specifically from his paper. Father Sellinger of Georgetown wondered whether Antioch found itself in any difficulty with accrediting agencies when the experimental courses were reduced to one class meeting per week or even per two weeks. Dean Alexander said they had no such trouble; that the proper basis for the accrediting of a course is the weight rather than the number of hours of actual professor-student contact. Since these experimental courses really put a heavier burden on the student, and, for that matter, on the professor (at least for the first year in which the course is taught in this experimental fashion) the problem of accreditation should not properly arise.

Dean Alexander went on to say that although the preparation for teaching such a course was undoubtedly heavy in the first year (witness the fact that a summer conclave was held to prepare the material) the system might well effect a significant reduction in faculty load, in that it would demand less preparation in the second and succeeding years.

In response to several questions on this general topic, Dean Alexander said the size of the experimental classes varied considerably, the largest consisting of 100 or so, others ranging from 20 to 25, and down to 8 to 10. He said that the faculty members picked for the experiment were among the best, and that rotation of the privilege was effected in the second year. The summer gather-

ing had several purposes, such as to afford the opportunity to prepare the materials, and to give the participants on the faculty a chance to meet together with the dean and talk over the experiment.

Answering a question from Dean Taeusch regarding the possible difficulty of converting Freshmen from "receivers" to "foragers," Dean Alexander observed that the experiment actually worked better with Freshmen than with upperclassmen, in view of their being somewhat more "plastic." He described several of the ways in which the experimental courses were organized for various groups of students with different abilities and preferences: the regular classes, the lone wolves, and in between a number of groups of six students who would meet periodically, usually at the regular class hour, electing a chairman and a recorder from among themselves, during the time that the instructor was not meeting the class. Occasional conferences with the instructor were made possible for students in all categories. Sometimes the instructor would, after a certain interval, let it be known that he was ready to be invited to attend a session of one of the smaller groups. A good deal of variation was allowed for, as it was understood that no one system would work well for all students.

Dean Alexander admitted that it is of course agreed that whether such a system would give instructors more time, so that they could teach more students, or so that they could devote more time to their own reading and research, is open to question. It was also agreed that to devise a system that would give the faculty more time for reflection is a most desirable objective.

In response to another question, Dean Alexander said that the student resistance to the experiment that had been encountered at Antioch was undoubtedly due to the fact that the students were not let in on the secret that an experiment was going on. This difficulty has been remedied in the second year, with good results. As for the number of Freshmen in the experiment, he said it included perhaps a quarter or a third of the Freshman class.

Dean Porter of Amherst remarked that some time ago Amherst determined to cut down on the number of courses offered and instituted a number of one and two hour courses, as well as some that met for four hours, to fill some of the resulting gaps, equalize the teaching load, etc. (The normal student load at Amherst is 16 hours per week, with a total of 128 required for a degree, but many students take more). It was observed (and apparently agreed upon) that one way of using a faculty more efficiently is to cut down on non-essentials and proliferation of courses.

Possibilities of allowing for independent study in advanced courses were discussed, as well as the feasibility of offering fewer "majors" (a major in Classics, for example, instead of separate majors in Latin and Greek) and certain kinds of combined majors.

The use of advanced undergraduates for teaching in elementary courses was brought up, and the group seemed to feel that this is a perfectly sound way of operating in such matters as assisting in labs, grading papers, or tutoring,

even though it always raises a number of problems. It was felt that the danger of degrading standards in this way could be offset by proper supervision of the students who are thus employed. For some students it probably would require more time than they can spare, but there are always some who can carry it, just as there are always some who can carry a heavier burden of extra-curricular activities. The practice of using students for assisting and teaching does have the valuable by-product of encouraging good students to go into teaching. Father Gustin of St. John's University (Minnesota) cited an example of one good student who had not thought of teaching as a career until he had some practice of this sort, but who then decided to go into the profession. It was agreed, in short, that when proper supervision is provided, student teaching and assisting can be a very good thing.

On the subject of relief in general of the faculty it was observed that good faculty object only to too much drudgery, and any alleviation (including limited use of teaching machines, but not including their use in teaching philosophy or literary criticism) would usually be welcomed.

Various incentives to independent work were discussed, and some time was given to consideration of the comprehensive exam as such a device. Should students have extra time to study for comprehensives? (Probably not). Should all departments give a comprehensive? (Probably should). It seemed to be felt that comprehensives are a good incentive to the independent study, but that comprehensives alone (or any other device alone) are not a sufficient means for encouraging it. One related suggestion was that Graduate Record Exams could be used as comprehensives (though this did not appear to be general practice) or as means for evaluating the students.

Another incentive is the "integrated" course, such as in Great Books, stimulating students to look for parallels and relationships on their own. Training students to participate in such courses on the basis of their independent investigations is a salutary thing. It is admitted, however, that whether a student is actually capable of independent study is variable, and it was agreed that independent projects should be selected with an eye to the student's capabilities. The function of the faculty is to show the student how to work independently, to open up the horizon for him.

After brief consideration of Advanced Placement and Advanced Credit, as well as early admission (despite possible objections from the high schools) as such an incentive, and after a comment to the effect that student resistance to too much discipline of any sort is always to be expected, the meeting adjourned with thanks to the Chairman for leading a fruitful discussion.

Respectfully submitted,

Robert E. L. Strider
Recorder

GROUP CONFERENCES

Section VI

Leader: Rev. W. E. O'Donnell
College of St. Thomas

Consultant: Dean Charles F. Marsh
College of William and Mary

Recorder: Dean Eugene T. Adams
Colgate University

Section VI of the conference met in Penthouse B of the di Lido Hotel. Father O'Donnell led off the discussion by summarizing briefly the subjects of the morning session and inviting comment. The discussion followed very closely the subject matter outlined in the morning papers and centered around three main topics: (1) Independent Study, (2) The Use of T. V. in Education, and (3) Learning Machines as described by Professor Skinner.

1. Independent Study

There was considerable discussion of the educational advantages of independent study projects, which some of our group preferred to call individual studies inasmuch as in the experimental projects reported, students demonstrated considerable dependence on faculty guidance. The question was raised whether independent, or individual, study was adapted only to the superior student. Those having experience in the matter reported that the average student seemed to like it and profit from it. Everyone agreed on the importance of careful student indoctrination before embarking on the enterprise. One experimental setup indicated that individuals who spent nearly a third of their time on learning methods of research were better motivated and did a better job than those who plunged immediately into some subject matter. Considerable apprehension was discerned among those students who shifted directly from the usual course procedures to independent work. They seemed to feel the need for reassurance about their grades since constant checks were not available, such as those to which they were accustomed. It was the general consensus that advanced planning of projects by the faculty and even infrequent meetings with the students consumed as much, or more, faculty time as was involved in normal class procedures. Two results were generally agreed upon: (a) there was no saving in faculty time so that the venture offered nothing in terms of economy, but (b) well planned individual study provided more mature educational results than traditional class procedures. On the whole then, an increase in this type of work would seem to be in order.

2. T. V.

Father O'Donnell reported on the joint T. V. enterprise conducted by members of individual colleges in the St. Paul area. While he felt that there was little evidence to demonstrate that T. V. techniques were superior to live lectures, he did point out several advantages. One was the public relation value when

open circuits were employed, and another was the fact that nationally known figures might be made available to larger groups than a normal lecture hall could house. Further discussion by the group brought out the fact that T. V. was a very useful instrument in presenting certain types of subject matter, such as medical education, operating procedures, etc. Once more it was pointed out that there was no financial saving involved and the success or failure depended largely on the individual teacher, as it does in all educational procedures. On the positive side, it was pointed out that while it didn't save time nor money it did save space. One college reported that off-campus T. V. students did slightly better in their examinations than on-campus students. These off-campus students met four times a semester on campus for discussion and examinations. The possibility of a fruitful combination of T. V. and correspondence courses was mentioned. The group felt that T. V. had fine potential for mass education and that its greatest value was as a supplement to regular teaching. Its special appeal for adult education was noted. Finally, it was pointed out that a T. V. presentation required very careful structuring, which automatically improved the lecture and assured constant revision.

3. Learning Machines

The group devoted a shorter amount of time to this subject than to the other two, but everyone was impressed by the ingenuity of Professor Skinner's device. The advantages noted were: (1) it assured active student participation in the learning process, and (2) required very careful structuring on the part of the "text" or disc maker. One apt description of the machine was that it was a "book that could talk back." Some members of the group felt that there was danger of fragmentizing knowledge if used too generally.

Respectfully submitted,

Eugene T. Adams
Recorder

GROUP CONFERENCES

Group VII

Leader: Dean Ernest H. Cherrington, Jr.
The University of Akron

Consultant: Rev. E. A. Doyle, S.J.
Loyola University (New Orleans)

Recorder: Dean William C. Archie
Wake Forest College

Group 7 of the American Conference of Deans met in the Fala Room of the Delano Hotel at 2:00 p.m. on January 7, 1958. Twelve representatives of the 17 who were assigned to group 7 showed up for the discussion. In addition to these 12 people, there were three or four guests, whose names were not recorded.

The group began by agreeing that the assumption underlying the experiments reported on in the morning session was clearly that ways must be found to teach more students with fewer teachers. Initially, in any event, the emphasis in all of these experiments has been to find and develop new techniques of teaching. The group noted that no one of the morning speakers made an explicit reference to this underlying assumption. On the contrary, some of the people in the group got the notion that the speakers were talking about improvements in teaching, rather than about seeking ways and means to teach more students with fewer professors.

We gave some 35 to 40 minutes to the use of television at the college level. Only one member of the group, unfortunately, had had first hand experience with television. Dean Harrington of the University of South Dakota (Vermillion) reported that one weekly lecture had been given throughout the fall term by TV to all students in a beginning course of speech. He estimated that some 250 students were in the course. These students, instead of being assembled in an auditorium as they had normally been in the prior years, were dispersed over the campus in a number of classrooms. In fact, then, this weekly TV lecture merely replaced a weekly lecture which formerly had been given to the same number of students on a live basis in an auditorium. Dean Harrington reported that the TV lecture did not save time or teachers. He believed that the experiment was costly and was undertaken merely as an experiment. The students nevertheless appeared to like the TV approach and it is believed that the lecturer worked harder at his TV lecture than he might have under other circumstances.

Another member of the group told about an experiment now going on at Penn State where the authorities are attempting to teach large numbers of beginning accounting students by TV. Reportedly this experiment is quite costly but otherwise is deemed to be successful. Another member of the group reported that both the University of Texas and New York University are experimenting with teaching freshmen composition to 50 sections concurrently by TV. No

details concerning these experiments were available but several questions were raised by members of the group.

The consensus of the group with respect to TV appeared to be that TV does likely improve instruction when wisely used. This means of instruction perhaps is more important at an institution where mass instruction is a necessity by reason of the large numbers of students. TV is deemed costly and for the moment cannot be justified in smaller institutions where there is no need for mass instruction.

The group then spent the remainder of the time available discussing independent study. It cannot be said that the group came to any well defined conclusion, but appeared to agree in general that independent study, in principle, is a very fine idea. It is fair to report, however, that opinions varied sharply from the extreme "independent study is in reality dependent study and does not save professional time" to "independent study is absolutely indispensable if we are to encourage our students to work on their own," and "independent study does save professional time and energy."

The group seemed further to be agreed on the following: 1. Independent study demands preparation on the part of the student to work alone. 2. Some areas of learning lend themselves more readily to independent study than others.

Dean Mossman of the Woman's College of the University of North Carolina in Greensboro, reported on an experiment in beginning biology. Six sections of freshman biology have only one lecture instead of the usual two and one laboratory a week. Miss Mossman reports that the group appears to appreciate the vote of confidence and is doing quite as well as the controlled group. Curiously enough, the students in the experimental group have not taken advantage of a special room provided them where visual aids and laboratory assistance have been made available. Apparently, this group finds working in the library or in their rooms quite satisfactory.

A number of experiments involving large classes, with and without TV, were noted.

The group did not discuss teaching machines and other teaching aids.

Respectfully submitted,

William C. Archie
Recorder

GROUP CONFERENCES

Group VIII

Leader: Dean Lloyd S. Woodburne
University of Washington

Recorder: Dean Ottis H. Rechard
University of Wyoming

Because the conference theme "Efficient Use of Teaching Resources" opened such large areas for discussion, Dean Woodburne suggested that the group deal first with the three phases of the topic developed in the papers presented at the morning session: self-teaching, television, and teaching machines. As the discussion grew the wisdom of the suggestion was borne out by the fact that adjournment time found the group far from "talked out" on those three subjects.

A first reaction to the idea of teaching machines was that a "whole new world was opened up." Space-machines, time-machines, and now teaching machines! With just a little relaxation of restraints the imagination could build up a push-button campus with the teacher seated at the electronic control panel directing sub-cutaneous ray injections of "education" into properly conditioned students. The problem of determining those "students" who are allergic to the new treatment would call for extensive research.

Return to reality was brought about with a question as to (a) the cost of the actual machine we had seen in the morning, and (b) the cost of maintenance of such equipment. The experience of one institution which equipped its language laboratory with machines too light for the use-load placed upon them was cited. The suggestion was made that commercial companies will set up language laboratories on a basis comparable to IBM handling of electronic computers, i.e., on a rental basis with maintenance included in the rent.

At the presently estimated production cost, $150-$200, of the Skinner Teaching Machine the cost of installing a considerable battery of them must be taken into account. How many of the gadgets would an institution with 10,000 students have to have? If they could be mass produced to sell at say $50 each could their use be expanded into all fields so that each student might be required to purchase one, just as engineering students now must purchase rather expensive items, e.g., slide rules and drawing instruments, for individual use.

It was pointed out that there would be a place for such machines in "browsing" rooms of libraries, in dormitories, in fraternity and sorority houses, and in other centers where students might be expected to study. An even larger market might develop outside the college campuses as the machine could be adapted for use by anyone genuinely interested in getting an education. Certainly correspondence courses could be developed which would use the machine as a major teaching aid.

Looking toward the possibility of widespread adoption of the Skinner machine, the question was raised if the faculties in a hundred colleges could be expected

to agree on the questions to be asked or the points to be raised on the discs for a given subject, e.g., American History for freshmen. If, on the other hand, discs are to be prepared for local use by the local faculty, the amount of time to prepare them must be taken into account.

The question arose as to the relative cost in teacher time (and hence in money) to prepare the discs as compared to the teacher time now spent in a given course. Almost certainly some of the work on the discs would need to be done in the summer, thus perhaps increasing the cost. Continuing revision of the discs must also be planned as part of the teaching program. Some data on these cost factors would be welcomed on evidence from the records of a "pilot plant" study.

Should a particular teaching machine find wide adoption, it might be anticipated that publishing houses would become interested in offering sets of discs for sale. A number of sets, perhaps eight or ten, could be prepared reflecting different general points of view and emphases in teaching. In view of the fact that few teachers can ever find exactly the right textbook even in fields where dozens are available some doubt was raised as to whether the sets of discs could be held to an economical number and still find a sufficiently wide usage for each set.

The introduction of the publisher into the discussion brought out the point that the teaching machine differs from the textbook in that the former serves as a re-teaching device with a paragraph by paragraph opportunity for the student to check on his learning. The machine's usefulness for remedial work and for late-bloomers suggested that perhaps it should be called a learning rather than a teaching machine. Whatever its name, there was agreement that its major contributions were: (a) to free teachers' time, and (b) to allow a student to work at his own pace on his own time. Certainly, rather than financial economy, improvement of instruction is the justification for bringing the machine into being.

Could the widespread use of teaching machines lead to colleges becoming primarily examining bodies? This question served as a bridge to the very limited consideration by Group VIII of the television phase of the theme. For the next query was whether a combination of television courses plus the home use of the teaching machine might make available the first two years of a college curriculum. A student could register for the courses which a college offers by TV thus getting the privilege of renting a teaching machine with appropriate discs provided at the proper times. Presumably the TV program would be open to anyone willing to tune in, though the application of the pay-as-you-receive plan might be used.

There is evidence that the impact of TV offerings is greater than might be supposed. The unprecedented sale of a book discussed and reviewed in an effective manner by a competent teacher was cited as an example. The planning of the TV programs with the follow-up use of the teaching machine might lead to a very dynamic organization and presentation of the course.

From those who had had experience in the development of courses to be presented by television came the report that the time required to prepare a half-hour "show" was a source of considerable complaint by teachers. The compen-

sating factor was the more useful attention given to each item of the presentation--organization, content, emphasis, gestures, visual aids, et cetera. A resulting phenomenon reported by one dean was the greater success of non-prepared students in a TV course as compared with presumably prepared students in a corresponding course given in the standard fashion. The better preparation on the part of the teacher might well be the controlling factor in this result. It was further hazarded that the presumed advantage of asking questions by the students in the personally conducted class was not used to an appreciable extent. "Students don't ask questions."

Looking to the future one other use for TV was emphasized. If the time comes when as a regular occurrence lecture sections of 500 to 1,000 or more students must be met in the sciences, then the strategic location of color TV screens around the hall would bring into clear view the activities of the lecturer. As a matter of fact it was remarked that even in present day lectures for 100 to 200 students this would be of appreciable assistance to students "in the far corners."

The repetition of a previously quoted sentence, "Students don't ask questions" serves well to open the report on the independent study section of the group's deliberations. If independent study is to be study and independent, there must be teaching on how to carry on both phases. There must be no delusion that independent study means putting books on reserve lists and making assignments. One dean reported that as much as a full semester is devoted to leading students into the profitable path of study on their own.

The necessity for the leading was emphasized by the idea phrased in many ways but saying in effect - a student finds it difficult to believe that he can learn except in the familiar classroom lecture, recitation, discussion routine. To handle the important but burdensome individual conference phase of independent study one institution gives credit for one teaching hour for each four supervisees.

Should we examine our long accepted assumption that beginning classes can in most cases be taught in large sections while the upper division work calls for smaller units? Can it be that the reverse is the better practice in terms of effect on students at the two levels?

Respectfully submitted,

Ottis H. Rechard
Recorder

GROUP CONFERENCES

Group IX

Leader: Dean Simeon E. Leland
Northwestern University

Consultant: Dean J. Van Ek
University of Colorado

Recorder: Dean M. M. White
University of Kentucky

Twenty-three deans discussed faculty procurement, the superior student, and class size. One of the reasons that faculty positions seem unattractive to outstanding graduate students is the low status and prestige that the teaching profession now occupies in our culture. Furthermore, we are rapidly losing the advantages that we once had as faculty members. The loss has occurred because of three factors: industry and institutions other than colleges and universities offer many of the same advantages in addition to their higher salary scale; the over-loading of the faculty has reduced or eliminated the opportunities for reading, study and travel; and the social climate has in some instances restricted freedom of expression. Another reason for our inability to attract outstanding young men is the financial reward for teaching; but the importance of this reason can be quickly exaggerated.

Should the deans formulate certain general principles concerning faculty solicitation from other institutions? As the enrollment in our various institutions increases, we must add faculty members. Would it be wise for us to agree that after a certain date, say, May 1, we would not offer a position to a faculty member of another institution for the following semester? Should we as deans write to the dean of the other college prior to offering a position to a member of that college's staff? As a bargaining point, aren't we likely to hurt ourselves in offering an increase in academic rank to a faculty member of another institution? Doesn't it cheapen our ranks?

On the other hand, would an agreement between the deans with reference to the final dates of making an offer for the next semester, consultation with the other academic dean, and no increase in faculty rank, damage the individual faculty member? Nothing must be done that will in any way decrease the status or prestige of the individual faculty member. In the final analysis, the success of our institutions depends upon the faculty, and one of the difficulties confronting us as a profession is that the individual faculty member doesn't feel that he has sufficient status. The great number of faculty openings and the relative scarcity of prospective faculty members may increase the prestige of the teaching profession and we should do everything possible to see that it does.

Why aren't we able to interest more students in the teaching profession? Some freshmen enter with definite vocational goals. The percentage doing so seems to vary from institution to institution. Small liberal arts colleges seem to be able to get a relatively large percentage of their outstanding students to attend

graduate school. Are the large institutions neglecting the gifted student, or are the selection techniques of the smaller liberal arts colleges better suited for this purpose?

We certainly can do more than we are now doing to acquaint the gifted student with the opportunities available to him. A large amount of such information should be given to the student while he is in high school. Many a youngster selects engineering as a professional goal while in high school on the basis of inadequate information. He doesn't know what the engineer does, and doesn't realize that many men trained in engineering leave the profession for administrative positions. The amount of misinformation about the various occupational opportunities is tremendous. We should do everything possible to see that the student during his high school days and during his first two years in college gets the correct information. For example, few parents and teachers seem to know that industry is now coming to liberal arts colleges in ever increasing numbers to offer positions to outstanding seniors who have majored in the social sciences or the humanities. These young men will be trained for junior executive positions.

Does the gifted student get the attention he needs in our institutions, or is he forced to follow the same program of studies as the average and below average student? Some of the institutions encourage the superior student to do independent work; others have special sections of certain courses for them; others have special programs for them; and still others give them advanced standing. There was general agreement among the institutions represented that we are not doing enough with these students.

The final topic of discussion was class size. Is it necessary for the English composition class to be limited to twenty or twenty-five? Two reasons were given for this limitation: the amount of theme reading and correction, and the fact that in a large institution, a freshman needs some instructor who has the time to get acquainted with him individually. The English instructor to a freshman is more than an instructor. He is a counselor and a friend.

The "tidal wave" of students that will supposedly engulf us has been misinterpreted. Many of these students will be adults who are interested only in certain courses and in the night school. The growth in the population in certain states has been unusually large, but in other states this growth has not been unusually large. Our general problem should be thought of in terms of "quality" rather than "quantity". We must get away in so far as possible from "mass education" concepts. Perhaps classes can meet less often. Perhaps reading periods of some weeks may be partial answer of how to reduce class size and how to take care of the superior student. Television may be useful in certain situations, but until we can get an adequate study of our present evaluative techniques no definite role can be assigned to television in the teaching situation.

Respectfully submitted,

M. M. White
Recorder

GROUP CONFERENCES

Group X

Leader: Dean E. W. McDiarmid
University of Minnesota

Consultant: Dean Ben Euwema
The Pennsylvania State University

Recorder: Dean Mina Rees
Hunter College

Discussion originated with a consideration of independent study experiments. Michigan reported that this year's experiment is proceeding on the assumption that there is a tie-up between the personality of a student and his success at independent study, and is attempting to develop motivations that take account of student personality. Preliminary evidence with 150 honor students seems to indicate that though they are good grade-getters, they are docile and more effective in a highly structured situation than in an environment of independent study. There is some confirmation of this conclusion in the Arts Graduate Program at Ohio State.

The suggestion that the use of independent study as a means of acceleration toward a degree would provide strong motivation elicited the information that such acceleration is possible in three of the institutions represented, but that the students usually prefer to take additional work rather than to accelerate. On the other hand independent study is often considered a desirable way of providing depth to a student's experience and enriching the program of honor students, rather than a means of accelerating the student's graduation or of reducing the teacher's hour load. Even at colleges where the number of class meetings is reduced, it was felt that faculty time had not been saved because of the necessary preliminary meetings of carefully recruited staff, and the necessary careful preparation of teaching materials. Repeated queries concerning the training of students in problems and procedures of independent study produced only the remark that basic library techniques can be taught, and that other procedures should probably vary with the discipline. Concerning independent study in a laboratory situation, Brooklyn College reported success with a small group of honor students in chemistry. The only successful method for reducing the teacher's hour load that emerged was the familiar device of increasing class size. Minnesota reported psychology lecture sections of 700, with students performing as well on tests as in smaller sections, and more students electing psychology as a major - probably reflecting the use of the best teachers as lecturers. There were several schools that reported the use of large or small sections at the option of the department, with recognition that within a department this should vary with the talent of the teacher as well as with the nature of the course. The question whether the objectives of independent study are the same as those of ordinary instruction was not answered, but it was noted that every one who has reported on an experiment is dissatisfied with the measuring instruments used.

The discussion proceeded to a consideration of the use of TV. Penn State re-

ported the use of its TV installation both on the home campus and to present the first two years' work at the Altoona undergraduate center. All evaluations seem to indicate very little difference in student achievement under TV instruction and ordinary instruction. The quality of instruction under TV is superior, but this is achieved at the cost of enormous amounts of preparation. Estimates of the cost of a TV installation ranged from $30,000 (Michigan State) to $300,000 plus maintenance (Penn State, USC). Opinion was expressed that the TV lecture should use visual appeal to be attention-holding. It was agreed that the purpose of using TV is to spread good teachers over more students. Texas reported the use of TV to provide enough Education courses to qualify liberal arts graduates for provisional certification as teachers.

Michigan State reported its concern that TV experiments have been too hurried, and its decision to conduct a continuing evaluation. A good man has been given this assignment and has been asked to take his time, structure some careful experiments, and proceed with the evaluation at his own rate.

Respectfully submitted,

Mina Rees
Recorder

MINUTES OF THE BUSINESS MEETING

The meeting was called to order by Chairman Blair Stewart. The reports of the Treasurer and the Secretary were presented and accepted, and the following list of officers was presented by the Nominating Committee: Dean Mary Phlegar Smith of Hollins College for Chairman, Dean Lloyd S. Woodburne of the University of Washington for Vice-Chairman, Dean Thomas H. Henderson of Virginia Union University to replace Dean J. J. Oppenheimer for one year on the Executive Committee, and Dean Dewey B. Stuit of the State University of Iowa for a three-year term on the Executive Committee. The nominations were unanimously accepted.

Chairman Stewart spoke of the success of the Conference, a success he attributed to the immediacy and the skilled presentation of the Conference theme, and thanked all, especially Dean E. Morton Miller of the University of Miami, who had helped to make the Conference successful.

Chairman Stewart also referred to a membership program which was initiated by the Executive Committee at its meeting in 1957. Through notification of the 1958 Conference to nearly 800 deans, enough interest in the proceedings of the Conference was created to cause approximately 300 deans who could not attend to reserve copies of the Proceedings at $3.00 a copy. Almost half of these deans have sent their payment in advance.

Before adjournment, Chairman Stewart introduced the new Chairman, the new Vice-Chairman, and the new members of the Executive Committee.

MINUTES OF THE MEETING OF THE EXECUTIVE COMMITTEE

With Chairman Blair Stewart presiding, the Committee decided to ask the Association of American Colleges to consider arranging for housing and space for general and group meetings of ACAD, since the Conference always meets with the Association. This request will be taken to Mr. Distler and Mr. Wormald by Chairman Mary Phlegar Smith.

The Committee discussed various topics which would be appropriate for the general theme of the 1959 Conference. Several suggestions were made and most of them fit roughly into a program on procurement of teachers. One suggestion concerned the theme of teacher education for the elementary and secondary levels.

The Committee was adjourned with the understanding that other suggestions for the 1959 program would be sent to Chairman Smith, and that she would follow the practice of sending to members of the Committee a list of all the topics under consideration, asking their opinion on the best topic.

Respectfully submitted

Paul A. Cundiff, Secretary
January 7, 1958

REPORT OF THE NOMINATING COMMITTEE

For Chairman	Dean Mary Phlegar Smith Hollins College Roanoke, Virginia
For Vice-Chairman	Dean Lloyd S. Woodburne University of Washington Seattle, Washington
For the Executive Committee	
For a three-year term	Dean Dewey B. Stuit State University of Iowa Iowa City, Iowa
For a one-year term (replacing Dean J. J. Oppenheimer)	Dean Thomas H. Henderson Virginia Union University Richmond, Virginia

Respectfully submitted,

Kaar R. Bergethon,
Dean, The College,
Brown University,
Providence, Rhode Island

Merrill Patterson,
Dean
Marietta College
Marietta, Ohio

Frank T. Gucker, Chairman
Dean,
College of Arts and Sciences,
Indiana University
Bloomington, Indiana

REPORT OF THE SECRETARY

The Proceedings of the 1957 Conference were edited by Dean Esther Raushenbush of Sarah Lawrence College and distributed to 228 persons who had attended. 14 requests were filled during the year. 18 persons whose names, titles, institutions or addresses could not be properly determined are eligible for a copy of the 1957 Proceedings, if they will write the secretary. Delivery of these copies will exhaust the supply.

The attendance at the 1958 Conference, as judged by the morning registration, was 204. 43 other persons who indicated that they would attend did not register. 165 persons attended the luncheon.

Respectfully submitted,

Paul A. Cundiff, Secretary

AMERICAN CONFERENCE OF ACADEMIC DEANS

Treasurer's Report — January 3, 1958

BALANCE ON HAND, January 3, 1957			$ 359.77
RECEIPTS (January 3, 1957 - January 3, 1958)			
248 dues collected at Conference @ $2.00	$496.00		
14 dues collected since Conference	28.00		
67 dues in advance for 1958 @ $3.00	201.00		
TOTAL FOR DUES:		$725.00	
Cash collected for postage, etc.		1.35	
Cash collected for 196 lunches		686.00	
TOTAL COLLECTED			$1412.35
TOTAL RECEIPTS:			$1772.12
DISBURSEMENTS (January 3, 1957 - January 3, 1958)			
W. C. deVane, typing, printing, postage, etc.		168.99	
Dinner for Executive Committee (January 1957)		88.31	
Paid to hotel for 199 luncheons, tax, etc		694.79	
Mrs. Freeland, cards, pins, etc.		6.85	
Haverford College, telephone		3.58	
Rainbow Business Service, mimeographing		250.00	
Sarah Lawrence College, mailing		52.92	
Mrs. Muriel Hawks, proofreading		22.50	
Miss Beverly Bandler, addressing		3.15	
Mrs. Anne Law, typing stencils		87.50	
TOTAL DISBURSEMENTS:			$1378.59
BALANCE ON HAND, January 3, 1958			$ 393.53

W. E. Cadbury, Jr.
Treasurer

REGISTRATION -- JANUARY 1958
AMERICAN CONFERENCE OF ACADEMIC DEANS

ALABAMA	
Athens College Athens	E. C. Paustian Dean
Talladega College Talladega	Cohen T. Simpson Dean
University of Alabama University	Marten ten Hoor Dean, College of Arts and Sciences
ARKANSAS	
John Brown University Siloam Springs	Rogene O. Weathers Dean
CALIFORNIA	
University of Southern California Los Angeles	Tracy E. Strevey Dean, Liberal Arts and Science
COLORADO	
University of Colorado Boulder	Jacob Van Ek Dean, College of Arts and Sciences
CONNECTICUT	
Fairfield University Fairfield	William J. Healy, S. J. Dean, College of Arts and Sciences
DISTRICT OF COLUMBIA	
American Association of University Women Washington 6	Dr. Eleanor Dolan Associate in Higher Education
Georgetown University Washington 7	Rev. Brian A. McGrath, S. J. Academic Vice-President Rev. Joseph A. Sellinger, S. J. Associate Dean
Howard University Washington 1	William Stuart Nelson Dean of the University
Potomac University Washington 12	Winton H. Beaven Dean of the Graduate School
Seventh-Day Adventist Theological Seminary Washington 12	Charles E. Weniger Dean
Trinity College Washington	Sister Columba Vice-President
George Washington University Washington 6	Calvin D. Linton Dean, Columbian College

FLORIDA	
Barry College Miami 38	Sister Mary Alice Dean
Florida Christian College Tampa 4	Clinton D. Hamilton Dean
Florida Southern College Lakeland	J. A. Battle Summer Session Director
Florida State University Tallahassee	Charles S. Davis Dean, College of Arts and Sciences
Jacksonville University Jacksonville	William E. Highsmith Dean
Rollins College Winter Park	Sidney J. French Dean
Stetson University Deland	C. Howard Hopkins Dean of the University
University of Miami Coral Gables	Charles D. Tharp Dean of the Faculties, Vice-President E. Morton Miller Dean, Liberal Arts
University of Tampa Tampa	M. C. Rhodes Dean of Faculty
GEORGIA	
Agnes Scott College Decatur	C. B. Kline Dean
Emory University Atlanta	Judson C. Ward, Jr. Dean, College of Arts and Sciences
Morehouse College Atlanta	B. R. Brazeal Dean
Oglethorpe University Oglethorpe University	George C. Seward Vice-President
Shorter College Rome	George A. Christenberry President
ILLINOIS	
DePaul University Chicago	Rev. W. T. Powers Dean, College of Liberal Arts and Sciences
Illinois Wesleyan University Bloomington	William T. Beadles Dean of the University
Knox College Galesburg	Herman R. Muelder Dean
Lake Forest College Lake Forest	William L. Dunn Dean, Vice-President
Monmouth College Monmouth	Hugh R. Beveridge Dean
Northwestern University Evanston	Simeon E. Leland Dean, Liberal Arts

ILLINOIS (Continued)	
Principia College Elsah	Alfred Gertsch Dean
Rosary College River Forest	Sister M. Candida, O. P. Dean of Women
Southern Illinois University Carbondale	T. W. Abbott Dean, College of Arts and Sciences
University of Chicago Chicago 37,	Robert E. Streeter Dean of the College
University of Illinois Urbana	J. R. Smiley Dean, College of Liberal Arts and Sciences
INDIANA	
Anderson College Anderson	Russell Olt Dean
Butler University Indianapolis	Paul A. Cundiff Dean, College of Liberal Arts and Sciences
DePauw University Greencastle	Robert H. Farber Dean
Earlham College Richmond	David E. Henley Dean
Franklin College Franklin	Robert G. Brooks Dean
Indiana University Bloomington	Frank T. Gucker, Jr. Dean, College of Arts and Sciences
Purdue University West Lafayette	W. L. Ayres Dean, School of Science, Education and Humanities
St. Francis College Fort Wayne	Sister Mary Josepha Academic Dean
University of Notre Dame Notre Dame	Rev. Charles Sheedy, C.S.C. Dean, Arts and Letters
Wabash College Crawfordsville	Benjamin A. Rogge Dean
IOWA	
Coe College Cedar Rapids	Stanley J. Heywood Registrar
Cornell College Mount Vernon	Howard Troyer Dean
Grinnell College Grinnell	Homer Norton Dean
Luther College Decorah	O. W. Qualley Dean
State University of Iowa Iowa City	Dewey B. Stuit Dean, College of Liberal Arts

IOWA (Continued)	
Wartburg College Waverly	John O. Chellevoid Dean
KANSAS	
University of Kansas Lawrence	George R. Waggoner Dean, College of Liberal Arts and Sciences
KENTUCKY	
Nazareth College Louisville 3	Sister Mary Ransom, S.C.N. Dean
Transylvania College Lexington	Herndon Wagers Dean
University of Kentucky Lexington	M. M. White Dean, College of Arts and Sciences
LOUISIANA	
Loyola University New Orleans	Rev. E. A. Doyle, S.J. Dean, College of Arts and Sciences
Tulane University New Orleans	William W. Peery Dean, College of Arts and Sciences
MAINE	
Colby College Waterville	Robert E. L. Strider Dean
MARYLAND	
University of Maryland College Park	Leon P. Smith Dean, Arts and Sciences
Washington College Chesterton	Joseph Doyle Dean
MASSACHUSETTS	
Amherst College Amherst	Scott Porter Dean
Atlantic Union College South Lancaster	E. W. Tarr Dean
Boston College Chestnut Hill 67	Rev. William V. C. Casey, S.J. Dean
Eastern Nazarene College Wollaston	Alvin H. Kauffman Dean
Emmanuel College Boston	Sister Angela Elizabeth Dean
Merrimack College Andover	Joseph J. Gildea Dean
Newton College of the Sacred Heart Newton	Mother M. H. Quinlan Dean

MASSACHUSETTS (Continued)	
Northeastern University Boston 15	Wilfred S. Lake Dean, College of Liberal Arts
Regis College Weston 93	Sister M. Lucille Dean
Suffolk University Boston 14	Donald W. Goodrich Dean
MICHIGAN	
Central Michigan College Mount Pleasant	Cleon C. Richtmeyer Director of Instruction
Kalamazoo College Kalamazoo	Laurence Barnett Dean
Michigan State University	Thomas H. Hamilton Academic Vice-President Milton E. Muelder Dean, College of Science and the Arts
Olivet College Olivet	James W. Newcomer Dean
University of Michigan Ann Arbor	Roger W. Heyns Dean, College of Science, Literature and the Arts
Wayne State University Detroit 2	Victor A. Rapport Dean, College of Liberal Arts
MINNESOTA	
College of St. Catherine St. Paul 1	Sister Mary Davida, C.S.J. Dean
College of St. Teresa Winona	Sister M. Emmanuel Dean
College of St. Thomas St. Paul 1	Rev. W. E. O'Donnell Dean of the College
St. John's University Collegeville	Father Arno Gustin, O.S.B. Dean
St. Mary's College Winona	Brother Julius Edgar, F.S.C. Dean
St. Olaf College Northfield	Orin M. Lofthus Dean
University of Minnesota Minneapolis 14	E. W. McDiarmid Dean, College of Science, Literature, and the Arts
MISSISSIPPI	
Mississippi Southern College Hattiesburg	Porter L. Fortune Dean
MISSOURI	
College of St. Teresa Kansas City 13	Sister H. Eileen Dean

MISSOURI (Continued)	
Concordia Seminary St. Louis 5	Arthur C. Repp Dean
Park College Parkville	Howard S. Greenlee Dean
William Jewell College Liberty	Richard Powers Dean
MONTANA	
Rocky Mountain College Billings	Ernest R. Wood Dean
NEBRASKA	
Creighton University Omaha 2	Rev. William F. Kelley, S.J. Dean, Creighton College
Hastings College Hastings	Frank E. Weyer Dean
NEW JERSEY	
College of St. Elizabeth Convent Station	Sister Anna Concilio Dean of Studies
Drew University Madison	Raymond A. Withey, Jr. Dean, Liberal Arts
Educational Testing Service Princeton	Anna Dragositz Gerald V. Lannholm Program Director
Newark College of Engineering Newark 2	William Hazell, Jr. Dean of Administration
Princeton University Princeton	Jeremiah S. Finch Dean of the College
NEW MEXICO	
Eastern New Mexico University Portales	Martin L. Cole Dean
University of New Mexico Albuquerque	Dudley Wynn Dean, College of Arts and Sciences
NEW YORK	
Brooklyn College Brooklyn 10	Walter H. Mais Dean
Colgate University Hamilton	Eugene T. Adams Dean of the Faculty
College of Mount St. Vincent New York 71	Sister Edith Marie Dean
Cooperative Bureau for Teachers 1776 Broadway, N.Y. 19	Virginia Tuxill Director, College Department
Cornell University Ithaca	Francis E. Mineka Dean, Arts and Sciences
Hunter College New York 21	Mina S. Rees Dean of the Faculty

NEW YORK (Continued)

Jesuit Educational Association 154 E. 23 St., N.Y. 10	Rev. J. C. Gloss, S.J. Regional Director
Le Moyne College Syracuse 3	Rev. Francis J. Fallon, S.J. Dean
Manhattan College New York	Brother Gregory, F.S.C. Dean
Nazareth College of Rochester Rochester	Sister Rose Angela Dean
New York University New York 3	Thomas C. Pollack Dean, Washington Square College of Arts and Sciences
Notre Dame College Staten Island	Mother Saint Mary Caroline Dean
Queens College Flushing, L. I.	Margaret V. Kiely Dean
St. Francis College Brooklyn 2	Brother Camillus, O.S.F. Dean
St. John's University Brooklyn 6	Rev. Joseph W. Browne, C.M. Dean
Syracuse University Syracuse	Edwin D. Smith Assistant Dean, College of Liberal Arts
United States Military Academy West Point	Lt. Col. C. E. Covell Assistant to Dean
University of Buffalo Buffalo 14	Milton C. Albrecht Acting Dean, College of Arts and Sciences
University of Rochester Rochester	McCrea Hazlett Dean

NORTH CAROLINA

Atlantic Christian College Wilson	R. B. Cutlip Dean of Students
Davidson College Davidson	C. J. Pietenpol Dean
Duke University Durham	Ellen H. Huckabee Dean of Undergraduate Instruction, The Woman's College
Elon College Elon	H. H. Cunningham Dean
Johnson C. Smith University Charlotte	T. E. McKinney Dean, College of Liberal Arts
University of North Carolina Greensboro	Mereb E. Mossman Dean of Instruction, Woman's College
University of North Carolina Chapel Hill	J. Carlyle Sitterson Dean, College of Arts and Sciences
Wake Forest College Winston-Salem	W. C. Archie Dean

OHIO	
Antioch College Yellow Springs	W. Boyd Alexander Dean
Bowling Green State University Bowling Green	K. H. McFall Provost
College of Mount Saint Joseph-on-the-Ohio Mount St. Joseph	Sister Maria Corona Dean Sister Margaret Loretto
College of Wooster Wooster	William Taeusch Dean
Kenyon College Gambier	Daniel T. Finkbeiner Dean of Students
Marietta College Marietta	Merrill R. Patterson Dean
Mount Union College Alliance	William C. Wesley Dean, Vice-President
Muskingum College New Concord	Howard V. Evans Dean
Oberlin College Oberlin	Blair Stewart Dean, College of Arts and Sciences
Ohio State University Columbus 10	J. Osborn Fuller Dean
Our Lady of Cincinnati College Cincinnati 6	Sister Mary Virginia, R.S.M. Dean
University of Akron Akron 4	Ernest H. Cherrington Dean, College of Arts and Sciences
University of Dayton Dayton 9	Edmund L. Rhodes Acting Dean
Western Reserve University Cleveland	Webster G. Simon Dean of Faculties of Arts and Sciences, Vice-President
Youngstown University Youngstown 2	J. E. Smith Dean
OKLAHOMA	
Oklahoma State University Stillwater	Schiller Scroggs Dean, Arts and Sciences
OREGON	
Portland State College Portland 1	Willard Spalding Dean of Faculty
Reed College Portland 2	Gerald P. Burns Vice-President
Pacific University Forest Grove	Levering Reynolds Dean
PENNSYLVANIA	
Bucknell University Lewisburg	Karl D. Hartzell Dean

PENNSYLVANIA (Continued)

Cedar Crest College Allentown	S. A. Nock Dean
Chatham College Pittsburgh 32	Lucile Allen Dean
College Misericordia Dallas	Sister Marianna Dean
Dickinson College Carlisle	Frederic W. Ness Academic Vice-President
Gwynedd-Mercy Junior College Gwynedd Valley	Sister Mary Gregory Dean
Haverford College Haverford	William E. Cadbury, Jr. Dean
Immaculata College Immaculata	Sister Anastasia Maria Dean
Juniata College Huntington	Morley Mays Dean
LaSalle College Philadelphia 41	Brother D. John, F.S.C. Dean Brother Daniel Bernian, F.S.C. Vice-President
Marywood College Scranton	Sister M. Cuthbert Dean
Pennsylvania State University State College	Ben Euwema Dean, Liberal Arts
St. Joseph's College Philadelphia 31	Rev. Matthew G. Sullivan, S.J. Dean
University of Pennsylvania Philadelphia 4	Lloyd W. Daly Dean, College of Arts and Sciences
University of Pittsburgh Pittsburgh 13	John Geise Dean, College of Arts and Sciences
University of Scranton Scranton 3	Rev. William G. Kelly, S.J. Dean
Villanova University Villanova	Sister Mary Alma Dean, Division of Nursing

RHODE ISLAND

Brown University Providence 12	K. Roald Bergethon Dean of the College
Pembroke College in Brown University Providence 12	Nancy Duke Lewis Dean
Providence College Providence	Vincent C. Dore, O.P. Academic Vice-President Rev. Joseph L. Lennon Dean

SOUTH CAROLINA	
Allen University	Arthur D. Greene
Columbia	Dean
Benedict College	T. J. Hanberry
Columbia	Dean
Wofford College	Philip Covington
Spartanburg	Dean
SOUTH DAKOTA	
University of South Dakota	Elbert W. Harrington
Vermillion	Dean, College of Arts and Sciences
TENNESSEE	
David Lipscomb College	Mack Wayne Craig
Nashville	Dean
University of Tennessee	Kenneth L. Knickerbocker
Knoxville	Dean
TEXAS	
Texas Southern University	J. A. Pierce
Houston	Dean of the Graduate School
Texas Wesleyan College	J. Elmer Cox
Fort Worth 5	Dean, Director of Summer Session
University of Houston	Philip G. Hoffman
Houston 4	Dean
University of Texas	J. Alton Burdine
Austin 12	Dean
	Arthur M. Cory
	Dean
Wiley College	T. W. Cole
Marshall	Dean
UTAH	
University of Utah	Sterling M. McMurrin
Salt Lake City	Dean of the University College
VIRGINIA	
College of William and Mary	Charles F. Marsh
Williamsburg	Dean
Eastern Mennonite College	Ira E. Miller
Harrisonburg	Dean
Hampton Institute	William H. Martin
Hampton	Dean
Hollins College	Mary Phlegar Smith
Hollins College	Dean
Lynchburg College	John M. Turner
Lynchburg	Dean

VIRGINIA (Continued)	
Mary Baldwin College Staunton	Martha S. Grafton Dean
Randolph-Macon Woman's College Lynchburg	Harriet D. Hudson Dean
Roanoke College Salem	Perry F. Kendig Dean
WASHINGTON	
University of Washington Seattle 5	Lloyd S. Woodburne Dean, College of Arts and Sciences
WEST VIRGINIA	
Morris Harvey College Charlestown 4	Harry G. Straley Dean
WISCONSIN	
Beloit College Beloit	Ivan M. Stone Dean
Lawrence College Appleton	Marshall B. Hulbert Dean
Marquette University Milwaukee	Adrian J. Kochanski Dean, Liberal Arts
Ripon College Ripon	Robert P. Ashley Dean
University of Wisconsin Madison	Mark H. Ingraham Dean, College of Letters and Science
WYOMING	
University of Wyoming Laramie	Otto H. Rechard Dean, College of Liberal Arts

LIST OF DEANS AND OTHERS RESERVING A COPY OF THE 1958 PROCEEDINGS

Adelphi College, Garden City, L.I., N.Y., Francis K. Ballaine
Alaska, University of, College, Alaska, Kenneth E. Young
Albertus Mangus College, New Haven 11, Conn., Sister Thomas Albert, O.P.
Alfred University, Alfred, N.Y., Nelson Marshall
Allegheny College, Meadville, Penna., Julian L. Ross
Alma College, Alma, Mich., William J. McKeefery
Alverno College, Milwaukee 15, Wisc., Sister M. Jutta
Arkansas, University of, Fayetteville, Ark., G. D. Nichols
Archbishop Cushing College, The, Brookline 46, Mass., Sister Mary Justine, CSC
Arkansas A. and M., Monticello, Ark., James H. Hutchinson
Ashland College, Ashland, Ohio, L. E. Lindower
Atlanta University, Atlanta, Ga., Thomas D. Jarrett
Aurora College, Aurora, Ill., James E. Crimi
Austin College, Sherman, Texas, J. B. Moorman

Baker University, Baldwin, Kansas, B. A. Gessner
Baldwin-Wallace College, Berea, Ohio, Fred E. Harris
Bates College, Lewiston, Me., Harry W. Rowe
Baylor University, Waco, Texas, George M. Smith
Beaver College, Jenkintown, Penna., Ruth L. Higgins
Bellarmine College, Louisville 5, Ky., John T. Loftus
Berry College, Mt. Berry, Ga., O. N. Darby
Bethany College, Bethany, W. Va., B. R. Weimer
Bethel College, St. Paul 1, Minn., Clifford E. Larson
Birmingham-Southern College, Birmingham 4, Ala., Henry T. Shanks
Bishop College, Marshall, Tex., H. C. Sun
Boston University, Boston, Mass., E. K. Graham
Bradford Junior College, Bradford, Mass., Louis Menand III
Bradley University, Peoria, Ill., John H. Shroyer
Brandeis University, Waltham, Mass., Saul G. Cohen
Bridgewater College, Bridgewater, Va., John W. Boitnott
Brigham Young University, Provo, Utah, Earl C. Crockett
Brooklyn College Library, Brooklyn 10, N.Y.
Buena Vista College, Storm Lake, Ia., W. D. Wesselink

Caldwell College, Caldwell, N.J., Sister M. Inex, O.P.
California, University of, Berkeley 4, Calif., Serials Dept., General Library
Calvin College, Grand Rapids, Mich., Henry J. Ryskamp
Canisius College, Buffalo 8, N.Y., Rev. Martin F. Mahoney, S.J.
Capital University, Columbus 9, Ohio, W. O. Doescher
Centre College, Danville, Ky., Frank H. Heck
Citadel, The, Charleston, S.C., R. M. Byrd
Chapman College, Orange, Calif., W. Marshon DePoister
Chattanooga, University of, Chattanooga 3, Tenn., August W. Eberle
Chestnut Hill College, Philadelphia 18, Penna., Sister Loyola Maria, S.S.J.
Claremont Men's College, Claremont, Calif., W. Bayard Taylor
Clark College, Atlanta, Ga., A. A. McPheeters
Clark University, Worcester, Mass., H. Donaldson Jordan

Coalinga College, Coalinga, Calif., William P. Niland
Colorado College, Colorado Springs, Colo., Lloyd E. Worner
Colorado Woman's College, Denver 20, Colo., Norman B. Dodge
Columbia University, Barnard College, N. Y. 27, Thomas P. Peardon
Concord College, Athens, W. Va., David Kirby
Connecticut, The University of, Storrs, Conn., W. Harrison Carter

Davis and Elkins College, Elkins, W. Va., S. Wilds DuBose
Delaware, University of, Newark, Del., Bruce Dearing
Delaware, University of, Newark, Del., N. M. McCafferty
Drake University, Des Moines, Ia., Elsworth P. Woods
Dubuque, University of, Dubuque, Ia., Leo L. Nussbaum
Duke University, The Woman's College, Durham, N. C., R. Florence Brinkley
Dunbarton College, Washington 8, D. C., Sister M. Madonna, C.S.C.
D'Youville College, Buffalo, N. Y., Sister Marie Christine

East Carolina College, Greenville, N. C., Leo W. Jenkins
East Texas Baptist College, Marshall, Tex., George S. Thompson
Eastern Michigan College, Ypsilanti, Mich., Bruce K. Nelson
Elmhurst College, Elmhurst, Ill., Alfred Friedl
Elmira College, Elmira, N. Y., C. Victor Brown
Eureka College, Eureka, Ill., Clarence R. Noe
Evangel College, Springfield, Mo., Richard D. Strahan
Evansville College, Evansville 4, Ind., E. M. McKown

Findlay College, Findlay, Ohio, C. A. Morey
Florida, University of, Gainesville, Fla., R. E. Page
Fordham College, N. Y. 58, Rev. Leo P. McLaughlin, S. J.
Franklin and Marshall College, Lancaster, Pa., J. M. Darlington

Gannon College, Erie, Penna., Rev. Louis Lorei
Geneva College, Beaver Falls, Penna., John S. McIsaac
George Washington University, The, Washington 6, D. C., O. S. Colclough
Georgia, University of, Athens, Ga., John O. Eidson
Georgia Institute of Technology, Atlanta, Ga., Ralph A. Hefner
Georgia Institute of Technology, Atlanta, Ga., Paul Weber
Gettysburg College, Gettysburg, Penna., S. B. Dunn
Goucher College, Towson, Baltimore 4, Md., Elizabeth Geen
Greenville College, Greenville, Ill., George T. Tade
Grove City College, Grove City, Penna., W. W. Swezey

Hamilton College, Clinton, N. Y., Winton Tolles
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Fortune, 9 Rockefeller Plaza, N. Y. 20, Haynes Roberg
Fund for Advancement of Education, N. Y. 22, Clarence Faust
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